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# ATARI CONNECTION

T.M.

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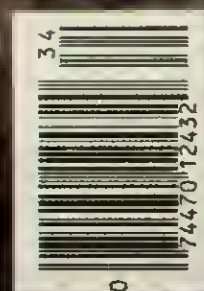


WINTER 1984

THE HOME COMPUTER MAGAZINE

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## Data Statements

### LOGO VS. BASIC: The Controversy Continues

YOUR ARTICLE COMPARING LOGO AND BASIC is an excellent example of how to tell one big lie without telling any little ones. For the most part, the technical details are accurate, and yet the overall impression conveyed by the article is howlingly wrong.

You write as if the history of computer programming came to an end in 1965. Those original MIT hackers and their younger successors now program in LISP. Why? Because we have come to learn that a well-organized language gives more expressive power, not less, than one which forces the programmer to think mainly about hardware limitations.

The BASIC programmer who spends weeks learning how to do player/missile graphics with PEEKs and POKEs is not learning "computer science." All he or she is doing is wasting time. In Logo, by contrast, support for player/missile graphics is not limited to merely making the hardware available to the programmer in its raw form. Instead, Logo provides intellectual support for this feature, so that programmers can think about moving objects smoothly around the two-dimensional screen in a uniform way.

BASIC focusses the programmer's attention on the weaknesses of whatever particular piece of hardware is at hand. If you become an expert on the quirks of the Atari 800, for example, when a new model comes out, you're back at square one learning a new set of mumbo-jumbo. For you to suggest that this is an appropriate strategy for "computer en-

thusiasts" is misleading and harmful.

The extremely insulting illustrations in the article suggest that Logo is a dilettantish language, while BASIC is the hard-working bee of programming languages. The fact is that anything which can be done in BASIC can be done much more easily in Logo. Once upon a time there was an excuse for BASIC: memory was expensive, and a BASIC interpreter could fit in a 4K memory. But computer memory is now almost free, and there is no reason to value the computer's convenience above the human being's convenience.

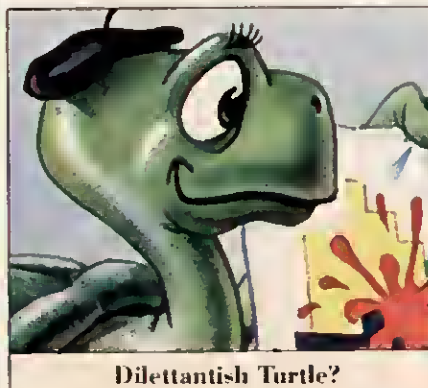
As a programming language, BASIC is just useless. I have often had the experience of trying to teach Logo to a programmer who has previously become expert in BASIC style. It is much harder than teaching a complete beginner. Non-modular programming, global variables, explicit assignment to variables, etc.—all of these form habits which are very hard to break.

To recommend BASIC to anyone for any purpose, in 1983, is a criminal act.

Brian Harvey  
Corporate Research Staff  
Atari, Inc.



BASIC Worker Bee?



Dilettantish Turtle?

### CEDEN

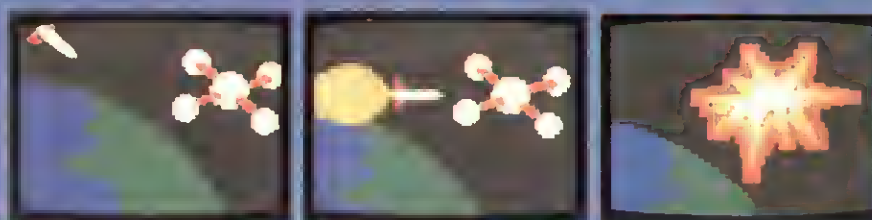
ON BEHALF OF THE STAFF OF THE CENTER for the Development of Non-Formal Education (CEDEN), I wish to thank you very much for the article you published in your Fall Issue on CEDEN's Computer Education Program, entitled "Closing the Gap."

Unfortunately, the author misunderstood a few points. I wish to empha-

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# TRONIX

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size that I did not "develop a computer education program in Spain." As a staff member of UNESCO working in international educational development, I was privileged to assist in minor ways with that important, innovative program. Rather, the Spanish Computer Education Program, funded by UNESCO/UNDP, was designed, planned and guided by Dr. Dean Brown, then a consultant to UNESCO from the Stanford Research Institute. Clearly, this program was one of the most creative computer education efforts of the early 1970s.

As the CEDEN program begins its second year, we hope that many other community groups will take an interest in developing computer education efforts. We are particularly grateful for your interest and support.

Emily Vargas Adams, Ph.D.  
Executive Director, CEDEN

## Now I Know

I PURCHASED AN ATARI 800 HOME COMPUTER here in Saudi Arabia, where I am working and living. The company that sold the computer to me never mentioned the existence of ATARI CONNECTION magazine. It was only during my leave in Belgium that I got in touch with your magazine (Summer '83 issue). I was so fond of it that I immediately decided to take a subscription for 3 years.

Pieter Bulcke  
Jubail, Saudi Arabia

## I Need to Know

I HAVE DECIDED TO WRITE TO YOU RATHER than to customer service because calls and previous requests simply didn't work. First let me say that I enjoy the magazine and look forward to receiving it as I consider it the final word on Atari. I get several other publications each month, however, your magazine tells it like it is. Unfavorable reviews of Atari products in other publications have usually resulted because the author has pitted the product against another product designed for operation in a different environment. I believe Atari stands alone as the home computer. Others advertise a product as a home whatever, but the Atari is the Rolls-Royce in the home market. When compared to the Apple or the Tandy

line it is like comparing the Rolls-Royce to a Kenworth truck.

My system is 100% Atari. An Atari 800, 810(2), 850, 830, 825 and a 410. My problem is purchasing Atari service manuals for the equipment. Sure I have all of the available pubs, but now that the line is about to be ended and a new breed introduced, I would like to be able to get the service manuals for the 810 and the 825. If you could aid me in this quest I would sure appreciate it.

For those Atari owners who feel capable, yearly preventative maintenance of the Atari 800 should include cleaning of all connectors and chips. This was all that was necessary to get rid of lockups on mine. The chips were practically welded in the dip sockets because of the buildup on the pins due to heat, humidity and dust. The two chips to be careful with are the Key In/Out ones. Thanks for your time. Hope you can help me out.

Martin T. Foley  
Moncks Corner, SC

Sorry for the mixup. Atari Customer Service has explained that service manuals are proprietary information, and not available to the general public. The only way you can get them is to be an authorized Atari Service repair person.

## Bug Eyed

CONGRATULATIONS ON THE "FIND THE BUG" your magazine presented in the Summer 1983 issue! Finally, I got to apply something I learned in Algebra II to real life!

Ronald Lovejoy  
Troy, Michigan

YOU GUYS CAUSED ME TO STAY UP ALL NIGHT trying various correlations on my Atari 400. In the process, I learned some things and had a lot of fun. It's too bad you don't publish more often than every 3 months.

Nicholas Carroll  
New Britain, Connecticut

I FOUND THE BUG! NOT THE ONE ON PAGE 19 of your Fall 1983 issue, but the one on page 32. Either someone printed the bottom right picture in reverse, or you have a picture of the first left-handed Atari 800 that I've ever seen.

C. Gleba  
Bolingbrook, Illinois

I FOUND YOUR BUG BY THE TRIAL and error method. I've only been programming for about 3 months. I've been trying to teach myself, but plan on taking a course at the Community College this summer. I never dreamed I could do so much with a computer and I'm still in the initial stage.

I can't seem to learn fast enough. I'm afraid my nine-year-old son will master it before I do.

Boh Carter  
Laneview, Virginia

## Starry Eyed

I FIND THAT I CANNOT RUN THE *Celestial* BASIC programs on my Atari computer with an Atari BASIC cartridge. There is no provision for the "TAB" settings, and they are essential in programming constellations.

I would appreciate any suggestions as to how to get the constellations loaded. Also, is there another form of BASIC available for the Atari computer?

John C. LaMonte  
Los Angeles, California

You have to define the tab string. If the line says `PRINT "mmm";TAB(X);"nnn"` which allows you to print something (mmm), then tab over to a position (X), then print something else (nnn), you would have to make a three-line entry like this:

```
? "mmm";  
POS. X, PEEK(84)  
? "nnn"
```

Keep in mind this is for a print to screen only, as that is how *Celestial* programs run.

Steve Englehart, who reviewed *Celestial* BASIC, recommends a good book to help you with astronomy: *Practical Astronomy With Your Calculator*, Second Edition, by Peter Duffett-Smith (Cambridge University Press, Cambridge).

The other kind of BASIC available for the Atari Computer is Microsoft BASIC, which is closer to the AppleSoft BASIC that *Celestial* BASIC was written in.

ATARI CONNECTION welcomes all letters to the editor. Send them to:

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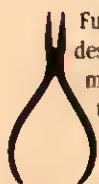
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# The Fine Artists of Computing

## Progressives and Mashers

**W**HEN I was in the Air Force, one of my jobs was to order the "Performance Report" from the Data Processing Center. To order my report, I had to meet with a programmer and an operator. We had exactly 80-columns of information to work with—that was all. And the report couldn't have more than 80 characters per line. We couldn't format the beast—we struggled just to cull 80 characters of information from a deck of five cards, containing 400 characters of essential personnel "data." We were working in the "Punch Card Age."

My job was to let the programmer and computer operator know what information I needed and review the error rate on the last report. I remember the programmer being somewhat bored by my little report—he had bigger, more challenging jobs, like the payroll run and promotion roster. But the operator, Barry, took an interest in my Performance Report roster. He was an entertainer at heart—adept at playing to an audience of one.

Barry's computer was a huge, transistorized card-eating monster that mangled our personnel cards and paychecks. It was caged in a cavernous concrete-block room that had a special floor covered with rubber mats. The rubber mats cushioned the operators' feet as they scurried to and fro, attending the needs of the machine. In this role, Barry was a *performing artist*.

You see, as Barry explained it, the computer was really a rather dim-witted clumsy giant—it didn't work very well. The various system peripherals—the printer, collator, sorter, etc.—could easily get out of sync. All it took was one punch card to jam in its slot or miss its gate and the entire "operation" would crash. Barry was a master at orchestrating what he called "a caco-

phony of crude electronics and bottle-plant machinery."

One of his more basic talents was the ability to spot a "bad piece of data"—a card—moving through the system. Barry, quick of mind and fleet of foot, would run along the ten-foot long sorting ramps and pluck the bad card from further trouble. This technique was one of many that insured a smooth running operation—albeit the "data" was now missing from the report. But this was the price of excellence. Barry's reports were works of art: clean, clearly printed—he always changed ribbons before an operation—and never broken. Broken reports meant the operator experienced



Henri de Toulouse-Lautrec, French, 1864–1901. *The Motorist*. 1896. Lithograph, The Art Institute of Chicago.

An early motorist as "machine operator": Distinctive styles of motoring emerged only several years after the invention of the automobile. The same can be said of early computing enthusiasts.

numerous system glitches which required loading new paper and a complete shutdown.

Today, the computer operator and the programmer have become one and the same person. And, as a new communications medium, "on-line programming" has spawned its own school and style of practitioners. While it's true that modern graphic artists are now discovering the computer as a new artistic medium, it seems we've overlooked the virtuoso *performance art* of the modern computer programmer.

If you work with programmers, developing ideas, debugging programs, designing software screens, you can't help but notice that each brings his or her own individual artistry to operating a computer system. Every professional programmer I've had the pleasure of working with has a style—like the recognizable strokes of a Van Gogh or the familiar riffs of a popular guitarist.

The most popular style I've witnessed among programmers is what I call "Hit RETURN." The Hit RETURN style uses a sharp "hit" on the RETURN key to enter a line of code into a program.

Programmers who can touch-type have their own special flair. These "Mashers" fire off bursts of familiar text commands at 150 words-per-minute clips, followed by gaps of dead silence as they ponder the next line of code. Mashers tend to be lone-wolf types.

Then there are the programmers with a true musical feel for the keyboard. Their sense of timing and rhythm is almost jazz-like. They know exactly how long each system operation takes. The disk drive is the bass. While the drive solos, they lightly tap out the time of the load or save, entering a new melody of commands when the drive drops out. I call this "Progressive Programming." On a hot night, a Progressive Programmer puts together a program that has a sophisticated structure—the keyboard rhythm helping to form the actual code arrangement.

Above all else, we must remember that when we use a computer we are still operators—machine operators. The word *machine* shares the same root word as *might*. By definition, a machine is simply a device that extends our own physical or mental forces. Thus computers, rather than turning us into automatons with cold rational minds of binary logic, have instead become just another mode of human expression—including the fine arts.

Ted Richards  
Editor



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ATCN-184



# NEWS

HOME COMPUTER

Edited by Elizabeth Metzger

## High-Tech Munchies

If you're one of those who never misses breakfast, you may have a chance to help contribute an Atari home computer to your school. General Foods' Post Cereals, manufacturers of Grape Nuts, Post Toasties, and other breakfast cereals, is teaming up with Atari to offer free Atari 800XL and 1450XL home computers, printers, disk drives, and other peripherals, plus a wide assortment of educational software to primary and secondary schools.

Hard at work on the year-long "Catch on to Computers" project are Atari's Consumer Promotions manager Julie Karbo and Marketing Services Director Bob



Lindsey, who enlisted the aid of Atari's educational group and the finance, legal, sales, and public relations departments. According to Tom

Herskovits, General Manager of General Foods' Breakfast Foods Division, "This project will allow thousands of schools from every corner of

the country to obtain badly needed computers, software, and peripherals."

If you think your school would be interested in free computer equipment, pass the word on to your teachers, your parents, and your friends. All you need are the proof-of-purchase seals from any of 18 Post cereal brand boxes. Computers, equipment, and software can be ordered only through your school.

For more details, write to Catch on to Computers, P.O. Box 3445, Kankakee, Illinois 60902 or call these toll-free numbers: (800) 435-7678; in Illinois (800) 892-1869.

## COMPUTER CARE AND FEEDING

Forget printed circuits, silicon chips, and hard wiring. The computer of the future, some say, may have organic brains developed in test tubes. Researchers across the country are now studying ways to "grow" a computer's microcircuitry in the form of biochips—organic molecules such as amino acids—capable of assembling themselves into electrical conductors.

Recently, scientists at North Carolina State University discovered a chemical compound, made up of carbon, nitrogen, oxygen, and certain metals, which will store electrons in specific locations within the molecule.

### Scientists Look to Bioelectronic Breakthrough

This molecular memory device—a million times smaller than current computer chips—could lead to "incredibly smaller and more efficient computers," according to Dr. Kenneth Hanck, one of its discoverers. Such computers would have important applications in robotics, medicine and aerospace.

Other scientists, applying genetic processes that determine the structure of living things, are using simple

proteins as electrical switches to simulate a computer's circuitry. "There are all kinds of models for molecular structures that behave as conductors and switches," says Dr. James McAlear of Gentronix Laboratories in Rockville, Maryland. McAlear speaks of "breaking through the silicon wall"—the fast-approaching limits of current microchip technology. He is experimenting with genetic engineering

techniques to "build a library of Tinkertoys out of antibodies," which, he says, can be replicated infinitely and used as logic chips.

Many in the field expect to see biochips integrated with current technology. Such hybrids would involve "optical memory" devices (dyes that change color on exposure to light) and electron-transfer processes like plant photosynthesis. Molecular computers may even respond to stimuli such as light and heat. And future computerists may have to remind each other, "Computers have feelings, too."—Paul Cohen

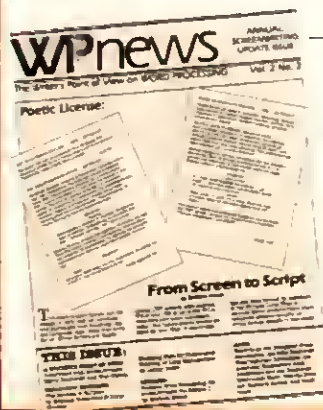


# The Bus Stops Here



**A**nxious to bring computer learning to its fourth, fifth and sixth graders, but limited by a tight budget, the Napa Valley (California) Unified School District turned to this "Computer Bus." Equipped with 17 Atari computers, cassette program recorders, a printer and disk drive, the refurbished school bus introduces students to PILOT programming. In addition to school visits, the bus makes stops throughout the community to demonstrate computer applications (inset).

## A Writer's Guide



If you use your home computer to write, or you're a writer who covers computer topics, here's a publication just made for you: *WP News*, a bi-monthly newsletter published by Word of Mouth Enterprises in Burbank, California, "is about using computers for the craft of writing," according to Barbara Elman, publisher and executive editor.

*WP News* doesn't focus on one type of home computer or word processing system. Nor is it geared to professional writers alone. "We've got over 3,000 subscribers," explains Elman. "They include authors, screenwriters, journalists, lawyers, doctors—anyone and everyone who uses computers for their own writing."

In *WP News* you'll find book reviews, interviews with users, idea exchanges, data base network information, marketing tidbits, and product reviews, "though we prefer to leave product reviews to other publications,"

says Elman.

Recent issues have included ideas for new markets for computer writers, interviews with screenwriters and authors, and hints on chaining files for continuous printing of long manuscripts.

Elman and managing editor Glenn Shiffman hope to turn *WP News* into a monthly magazine, "if we can get funding," says Elman.

In the meantime, you can start your subscription for \$24/year by writing to Word of Mouth Enterprises, 211 E. Olive, #210, Burbank, CA 91502. Sample issues are available for \$2.

# HOLLYWOOD HOTLINE

## Celebrity Database



On the left: Grace Kelly and James Stewart in the re-release of Hitchcock's *Rear Window*, and the Police on tour.

When Eliot Stein decided to go into the telecommunications business, it came as no surprise to his Hollywood buddies that he'd choose entertainment news as a database. What surprised Stein was that nobody else had thought of it first.

Now, more than a year later, Stein's "Hollywood Hotline," an entertainment information package he developed on an Atari 800

home computer, offers entertainment news bulletins in five different categories—motion pictures, television, celebrities, music, and husbands.

"We're taken seriously by the studios and their publicists," explains Stein from his Hollywood office, "so they allow us to be privy to information you can't find anywhere else."

In addition to news

features, Hollywood Hotline offers a movie guide and daily soap opera reviews, operated out of an office in Chicago. "We're the only ones doing daily soap opera reviews," says Stein.

Subscribers have already gotten the latest scoops on David Bowie and the Police, James Garner's lawsuit over his share of the profits from "The Rockford Files," the upcoming film adaptation of

John Irving's *Hotel New Hampshire* with Jodie Foster, Nastassia Kinski and Beau Bridges, and the re-release of Alfred Hitchcock's classic, "Rear Window."

Hollywood Hotline is available through CompuServe, Western Union Telex machines, Newsnet, and CBS Extravision.

For more details, write Hollywood Hotline, P.O. Box 1945, Burbank, CA 91507.

## THE ENVELOPE, PLEASE

### APX Announces Contest Winners

After hours of closed-door deliberations, the Atari Program Exchange (APX) judges have finally named the winter winners in the APX Quarterly Contest. All the programs, written by consumers for the Atari home computer, were judged on "user interface and overall design, originality, ease of use, implementation, documentation, and interest level."

Each winner receives a cash prize and a chance to have his or her program distributed through the new APX winter catalogue.

#### HOME MANAGEMENT

1st prize: R. Stanley Kistler, Monrovia, California, for *Atspell* for AtariWriter

#### CONSUMER

1st prize: Ed Churnside,

Montclair, New Jersey, for *Dragon's Quest*

2nd prize: Adam M. Bilyard, Cheshire, England, for *Bellman*

3rd prize: Charles Mullally, Muskegon, Michigan, for *Mastermatch*

#### LEARNING

1st prize: Paul Nicholls, Brisbane, Queensland, Australia, for *National Flags*

2nd prize: Bruce Campbell, Miami, Florida, for *Character Fun*

3rd prize: Kendall Browne, Denver, Colorado, for *Numberland Nightwatch*

And for the special 1984 Olympics category, the prize went to A.P. Casper of Milwaukee, Wisconsin, for *Equestrian*. Casper wins a trip for two to the summer Olympic Games in Los Angeles.

If you missed entering your program in this contest, not to worry. You still have time to enter it in the spring contest. But hurry! The deadline is January 3rd, 1984. For details, contact Atari Program Exchange, 3281 Scott Blvd., Santa Clara, CA 95051.

## WHIZ KIDS WANTED

### Tell Atari What You Think

How would you like to give Atari's execs some sound advice about home computers? Well, now's your chance. Six openings on Atari's Youth Advisory Board will be opening up in March. The Advisory Board, made up of computer-literate teenagers throughout the U.S., acts as a sounding board for ideas about computers, video games, and telecommunications networking from young people's perspectives. And the folks at Atari take members' opinions seriously.



It's not too late to apply. If you're between the ages of 13 and 18, computer literate, and you want a chance to present your ideas to Atari's product development and marketing pros, then the Youth Advisory Board is for you.

Interested? To apply, just send your name, age, background, interests in computers, and interests outside of computers to Noreen Lovoi, Youth Advisory Board, Atari, Inc., P.O. Box 427, Sunnyvale, CA 94086. The application deadline is February 29, 1984.

## A Class Act

### Computer Guide Has the Answers

Looking for a class in BASIC? Trying to increase your computer literacy? If so, and you live in the San Francisco Bay Area, you'll be interested in a new directory of personal computer classes.

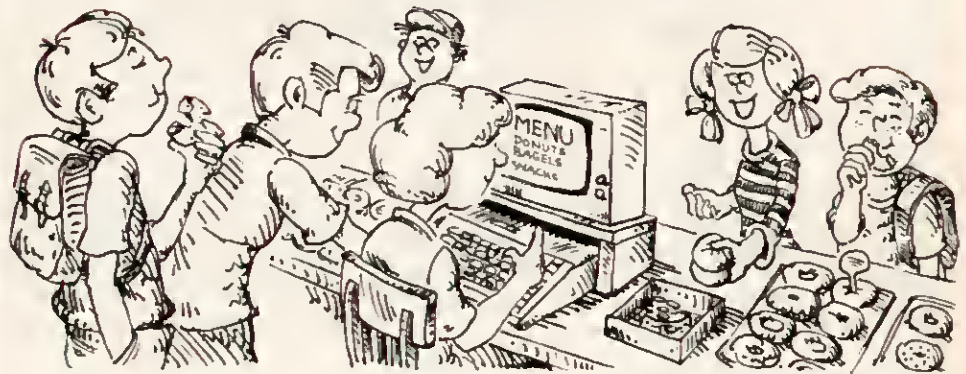
*Bay Area Computing Guide* lists over 500 personal computer classes on word processing, financial planning, data base, programming, computer graphics, and educational software offered by over 150 computer stores, schools, and training centers in the Bay Area.

Listings are cross-indexed by 25 subjects so you can find a class in a specific application, like "Real Estate" or "Programming in Pascal." Plans are in the works to update the guide quarterly, expand it to include all of Northern California, and publish a Southern California edition, according to director Paul Song.

Single copies are available for \$3 plus \$1 postage and handling by writing *Computing Guide*, Suite 301, 10601 S. De Anza Blvd., Cupertino, CA 95014 or calling (408) 973-0582.

## BYTES OF BAGELS

### High School Students Get the Business



Students at Montgomery High in Skillman, New Jersey, have added computers to their repertoire—along with bagels and doughnuts.

The school's special education program for students with learning disabilities used the profits from its own snack foods business to purchase two computers to teach remedial skills to its students.

Making a working business out of feeding the always hungry 7th through 12th grade student body wasn't easy. But the project is guided by the energetic Angie Rebert, special education teacher.

"The goal of this project was to provide students with experience keeping books for a business, and to create a project which was enviable to the rest of the student body," says Rebert. Since other students tend to place kids with learning handicaps in a lesser status, Rebert wanted her students to have a program that would provide a little ego boosting—make them someone special.

The program was started two years ago with the support of the high school, and approval by the Board of Education. Members of the Learning Disability program visited commercial food preparation companies to learn how to prepare their snack foods. The class then began selling doughnuts and bagels in the morning to the high

school students, and eventually sold after-school snacks to the junior high students three afternoons a week.

A state education grant for special programs was used to purchase an electronic cash register to teach cash transaction skills to the students. In the first year, the business earned more than a \$1000 profit.

With the money, the students voted to buy a computer for their Learning Center, after doing their own consumer research on which brand to buy.

Rebert required each student to study the products, make his or her choice by comparative shopping, then submit a brand name recommendation. The students chose to buy an Atari 800 Computer, an Atari 410 Program Recorder, an Atari 810 Disk Drive, and a beginning selection of software. They bought the computer from a local dealer, Crazy Eddie, so that service and support would be near at hand.

The computer has become a focal point of learning activity. The kids compete for computer time by a good conduct merit system. The students used additional profits to buy a second computer, an Atari 400, for games, to be used after school hours (again, computer use was based on a merit system).

The students relied upon the dealer for technical sup-

port and have learned computer skills from the manuals provided with the *Programmer Kit* series.

One drawback is the lack of quality educational software appropriate for a learning disability program. "I wish I could test the software first to see if it is acceptable for my class, but none of the stores will allow it," explains Rebert. "Unfortunately, a majority of the software is just too fast-paced—not remedial enough for my use. I can't take it back after it has been used, so I'm stuck with it." She points out that one piece of software even taunted the user with insults after he or she missed a specific number of answers.

Another drawback is that Rebert doesn't get enough time of her own on the system, since her students are always on it, even during lunch and after school. So when questions come up, she's sometimes hard pressed to answer them.

The computer learning program has provided the students with a good base of basic learning skills. Although they don't have plans in the near future to computerize their business into a state-of-the-art enterprise, the prospect is not out of the question.

Providing that Rebert manages to get enough time on the computer.

— Myrna Rae Johnson



# The Fine Art of Computing

## A Learning Guide to Complete Computer Literacy

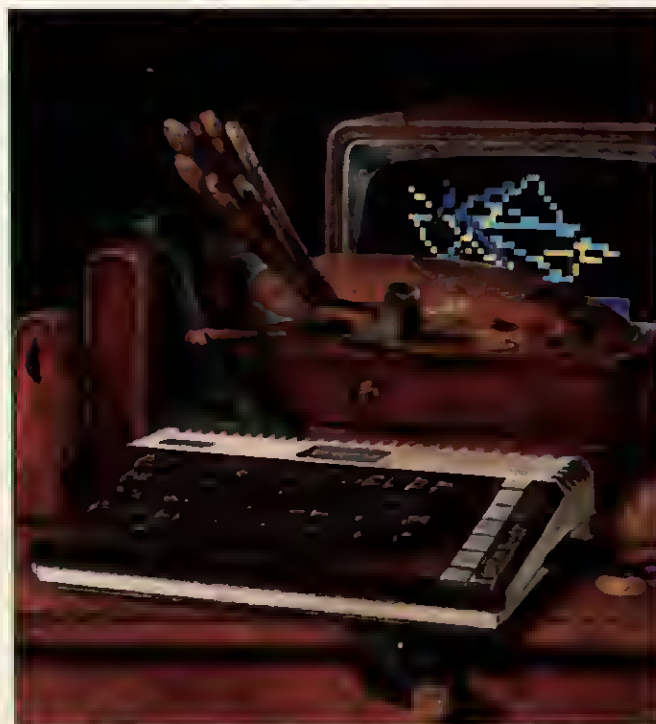
By Anita Malign

**A**RE YOU SITTING in front of a new computer and wondering what to do with it? Don't feel alone.

The number of people who own home computers is growing by leaps and bounds. New ideas of what to do with them and how to use them come up every day. Who do you listen to? What do you read?

First of all, it's important to remember that because all this is so new, you probably know as much as the next person. It's a new frontier that you can choose to limit or extend. You're likely to learn as much on your own as you will from taking a course, unless it's a course targeted to a very specific need. What you'll absorb from current magazines, books, and other computer users will be plenty to ignite your enthusiasm.

One of the goals of the curriculum offered here is to let you see how you can extend the wealth of information you already



have—the knowledge you've gained from the very busy and varied aspects of your life. A computer won't render useless the way you've always done things—quite the contrary. It can broaden many of your interests, ease many of your chores, and allow you to connect with a new world of people and ideas.

Perhaps we can think of the computer as the tool for better communications, for cooperation, not necessarily competition, and for spreading knowledge, however one chooses to define it.

See what areas of computing intrigue you most, find others on your wavelength, perhaps simply via an electronic bulletin board. (Read on for more information about them!) But whatever you do, don't leave behind all that has been learned before. Computers are only a new medium of expression.

It's time we learn the *fine art of computing*.

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### Education

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**W**HY SHOULD I learn on a computer? What's really in it for me? Maybe you've asked yourself these or similar questions.

Hopefully, learning is a life-long experience. As the world grows we grow with it. Constant learning can keep one young—when you discover something new, you feel, somehow, new. Microcomputers in the home are new. They're exciting many people. But where do I even begin, you ask?

First, grasp the basics of how to operate your computer. You can start with the instructions provided with the computer, but sometimes they are not enough. At the end of this segment I've listed several extremely helpful books. Plunge in! Perhaps skim the instruction manuals and books first. Then sit down

at the computer and follow the instructions step-by-step.

## Classes

Should you take a class? Yes-no-may-be. Yes, if the class is quite specific to your needs. If you have a microcomputer you don't really need to know about mainframes. (A mainframe is a large computer, ranging from room-size to refrigerator-size.)

I took a class in BASIC at a local community college that turned out to be not what I needed. The BASIC programs were geared to business applications, with lots of math problems. That class was *not* specific to my needs, although I did get a grasp of BASIC.

From my experience, I suggest you talk with either someone who's taken a class you're interested in or to the professor, or try to sit in on a class before you register.

## At Home

There is a lot of learning you can do at home. First of all, how are you doing on the keyboard? Were you a hunt-and-peck report typist in college? If so, you might just like to learn how to touch-type. Consider the typing as perhaps a first family project. The Atari Program Exchange has an excellent program called *Typo Attack* that's a lot of fun. Your fingers may get twisted initially, but you'll get the hang of it and learn your skills. Your kids will enjoy this too, as well as any other household members. It's a good educational beginning.

## The Kids

What about your kids? Are they going to be left behind in this technological surge if you don't provide them with the latest computer, software—the works? It is a reality that a working knowledge of how to operate a computer can be quite helpful in one's life. Being "computer literate" doesn't have to cut a child off from other kinds of learning. Children are naturally curious about everything. I've spoken with young people who have acted as computer instructors and the majority of them were interested in very different fields for their future work, i.e., veterinary medicine, writing, teaching. I truly don't believe our children will be interested *only* in computers.

Is your child taking a computer education class? If so, it's a good idea to keep very up-to-date about what your child is learning from computers. You, as a parent, can become involved in the child's learning process. After all, aren't you there to help her with her homework?

A recent statistic from Future Computing Inc. predicts that a billion dollars will be spent on educational software by 1987 and "70% of the billion dollar

educational software market will go to homes." A further prediction is that the software bought for the home will be "a new breed of games"—games that will both entertain and teach.

## Educational Software

So now you might ask, "What *should* a child learn? At what age can a child begin learning on a computer?" There is software suitable for children of all ages. There are programs for preschoolers and you'll have to decide if this is the way, for instance, your child should learn the alphabet. Children of six or seven can learn to boot a disk, manipulate a joystick, and use the keyboard. This can start them on mastering eye-hand coordination. To help choose the right software for your child, I suggest asking yourself some questions:

- What do I want my child to learn—and why?
- What has my child expressed an interest in learning?
- Does my child need some special tutoring in a specific area?

Once you've answered these questions you can start your research on what software will meet your needs. Unfortunately, it's not just a matter of going to the store and buying something. There's some knowledge you should have beforehand.

If the child needs special help in an area, I'd begin by talking to the child's teacher. If the teacher of that subject, say math, is different from the computer teacher, talk to both. Get a clear idea of what the special problems are and what steps need to be taken to correct them. Then talk to the computer teacher and see if he or she knows of software suited to that need.

Here's where a computer users' group may come in very handy. Talk to other people in your situation. What programs have they tried? What were they looking for? Did the software live up to its expectations? The last question is important. In this burgeoning market, lemons do exist and considering the cost, you'll want to avoid them as best you can. It's still not common practice to be able to preview software in stores, so you want to do your best to feel that you're not buying "blind."

Here's a few considerations to keep in mind if you do get a chance to preview software:

- Does the software make good use of the computer's interactive capabilities?
- Does the content have clear instructional objectives?
- Is the content accurate?
- Is the documentation adequate or better?
- Do the graphics and sound have "pizzazz?"
- Is the program challenging, involv-

ing, varied, and fast-paced?

- Does it avoid boring drills and quizzes?

One final piece of advice: Here in the computer age, the old-fashioned "word-of-mouth" may be your best guide.

## Suggested Reading:

**Electronic Learning** (magazine), Scholastic, 902 Sylvan Ave., Englewood Cliffs, N.J., 07632

**Electronic Education** (magazine), Suite 220, 1311 Executive Center Drive, Tallahassee, Fla. 32301

**Practical Guide to Computers in Education**, Colburn, et al., Addison-Wesley.

## Programming

**WHY LEARN** A computer language? Why program? "Do I really *have* to," you ask?

Let's answer the third question first. No. You really don't have to know how to program in any language to use your computer. But, you may just want to think a little about what these languages are all about. Si? Oui? Language is a way of communicating—and in this case, communicating with a machine; a machine whose *modus operandi* is essentially thousands of off and on switches. So the languages we will discuss here are an important link between our spoken English and the machine's binary notations, 0's and 1's—on's and off's.

Scores of modern computer languages exist and they each have their own vocabulary and set of "grammatical" rules (syntax). A program listing is simply a set of instructions which tells the computer to perform a certain task. No matter what language that program's written in, the commands and syntax translate your instructions into the computer's basic binary notation. (But that's all you have to know about that!)

But, if discovery intrigues you, if problem-solving gets you moving, if you want to custom-design a program to *your* needs, and if you want to feel like you're really in control of your machine, then programming will no doubt appeal to you. Whatever language you choose to learn will allow you to program something to your liking.

But, which language? "Where do I even begin?" you ask. Let's look at the three most accessible languages from Atari and see what each holds in store.

## BASIC

John Kemeny and Thomas Kurtz of



Dartmouth College developed the BASIC language. They designed it as an easily learnable and usable language. Today, there are dozens of versions ranging from quite sophisticated to very simple. BASIC made its popular debut at the same time as the microcomputer. It was easily adaptable to the small computer and thus became widely used. BASIC will let you do calculations, graphics, and sound.

Richard Pugh, a computer science educator in Cupertino, California gave me a list of some important phrases and commands you'll come to know as you proceed.

- How to PRINT a sentence on the screen.
- How to input information to a program.
- How to make a subroutine. (A subroutine is part of a program you use over and over again.)
- Understand the term, FOR/NEXT LOOPS. (That's repeating a statement over and over.)
- Understand what the term, STRING ARRAYS means. (A string array is simply a "string" of data arranged in a particular order.)

You'll come to know these terms and more, whether you program a calculation such as interest earned on your savings account, or create graphics or sound. A drawback, Pugh warned, is that BASIC can become "spaghetti" programming. Because of the subroutines and other functions many, many disorganized lines of jumbled code can result.

My experience with learning BASIC in a course completely geared to programming calculations was that it forced me to think logically. It was a *deja vu* journey back to Algebra II. However, there are, I've learned, many approaches to teaching BASIC—see below for some excellent books. And, that brings me to another point in BASIC's favor, much has been written about it, more than any of the other languages. You'll probably find a book that fits your style and your needs.

## Logo

Now, let's take a look at Logo. Dr. Seymour Papert of MIT developed Logo as a learning language specifically for problem solving. He also wanted it to be simple enough so that a five-year-old could write a program and sophisticated enough for a computer scientist to become engrossed with it.

Logo boasts the now-famous "turtle-graphics." In the Atari version of Logo, little turtles made of pixels actually "draw" your graphics on the screen. And indeed, graphics is one of the pop-

ular things to program—although you can do other types of programs as well.

Some important features of Atari Logo with which you'll become quite familiar are:

- The four turtles that move around the screen.
- Set speed, a command (SET SP), that lets you decide how fast these little guys move!
- Set color, Set background, (SET C), (SET BG)—up to you too!
- REPEAT—simply type the word instead of FOR NEXT, as in BASIC.

You can also change the shape of the turtles, create a design, draw a picture and plot a shape. You can even create your own commands. You're not limited to the "primitive" commands that are part of Logo's vocabulary.

For instance, you can teach the computer to make a square. If you type in "square" the computer will say, "I don't know how to square." Then, you continue by telling it!

Example:

### TO SQUARE

```
FD 30
RT 90
FD 30
RT 90
FD 30
RT 90
FD 30
RT 90
```

Also, a special feature of Logo is that you can program the basic square shape but adjust the size as you go along.

With BASIC you must write the program specifically to the shape you want. Most of the programs in ATARI CONNECTION are written in BASIC—you can compare the Logo example to some of the simple BASIC programs. Obviously, this is a clear example of how Logo is easier and more friendly than BASIC.

According to Pugh and others, however, it is harder to learn the text and calculations aspects of Logo unless one has a teacher. BASIC, on the other hand, can be self-taught. Interestingly, Logo has been found to be very helpful for physically and learning disabled children. But, most likely, these children would have close teacher contact.

## PILOT

PILOT is a highly interactive language—it reacts to the data it receives. That was the very reason for its creation. Dr. John Starkweather of the University of California, San Francisco, developed the language for teachers to write exams and tutorials. This language allows for pattern-matching by the use of special commands, some of which are:

T: (Type or print)

A: (Accept)

M: (Match)

T: Who discovered America?

A: Columbus

M: (If you type in "Columbus," it "matches.")

So, if the student's response to the question was correct, you can further program the computer to say, "That's correct," then have it play music or whatever.

Additionally, in its graphic mode, Atari PILOT uses turtle graphics although the "turtle" does not appear on the screen.

Clearly, there is much controversy among experts when they're asked which is the language to learn. The fact is, many Atari computer owners are learning all three. Each is used by inserting a cartridge into the computer, although ATARI BASIC is built into the new Atari XL computers.

Logo is excellent for children, certainly, but also exciting and challenging for adults. In fact, many of its abilities are still untapped, thus increasing its excitement.

PILOT offers its unique interactive capabilities which can certainly meet some very specific needs.

BASIC can perform a wide variety of tasks and, although the language may be somewhat cumbersome, there are a lot of programs and books written about it.

## Suggested Reading:

**Kids and Computers, The Parents Microcomputer Handbook**, Eugene Galanter, Ph.D, Director the Children's Computer School, Perigee Books, Putnam, N.Y., 1983. How to use the computer, programs for children, how to buy a micro, and more.

**Inside ATARI BASIC**, Bill Carris, Reston Pub. Co., Reston Va., 1983. A simple approach using a lot of humor and illustrations. Good choice.

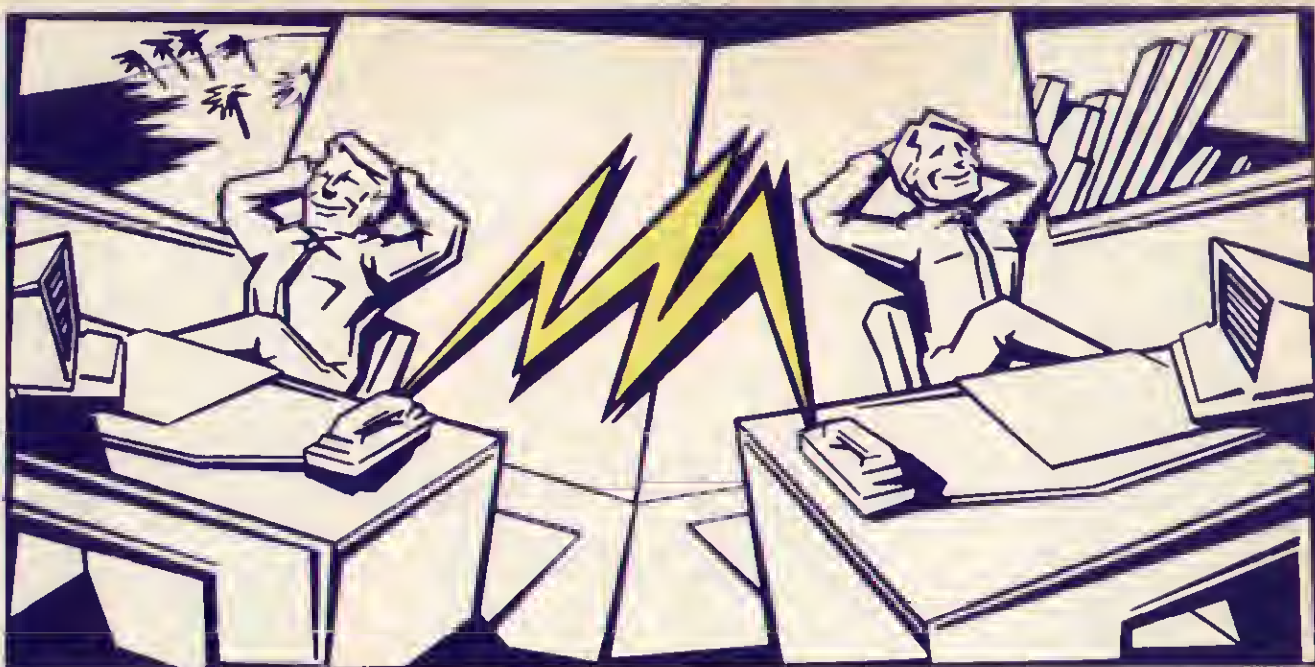
**The BASIC Tutor 1 Add-A-Pak**, Atari, Inc. A complete home study course in ATARI BASIC programming. Includes *Inside ATARI BASIC* and *101 Programming Tips & Tricks* books; An *Invitation to Programming* tutorial program cassettes.

**Your Atari Computer**, Lon Poole, et al., Osborne/McGraw-Hill, Berkeley, Ca. An excellent all-around book for Atari computer users.

**Atari Programming with 55 Programs**, Linda M. Schreiber, TAB Books. A good book for general purpose application programs.

**101 Atari Computer—Programming for Atari Computers**, dilithium Press.

**The Turtle's Sourcebook**, Jim Muller,



Kathleen Martin, Donna Beardon, Formerly distributed by the Young People's Logo Association, Reston Pub. Co., Reston, Va.

**Logo: An Introduction**, Dale J. Burnette, Creative Computing, Morristown, N.J.

**Mindstorms, Children, Computers and Powerful Ideas**, Seymour Papert, Basic Books, N.Y. The philosophy of Logo by its chief proponent.

## Telecommunications and Networking

**THE MODEM**—a telephone hook-up to your computer—can be an extremely powerful component for your computer system. A modem communicates with on-line databases, electronic bulletin boards, transfers copy via your word processing system, and more.

### Databases

An on-line service such as *Tymnet* or *Tymnet* provide access to hundreds of databases, which are essentially files or stores of information, whether a special information service, or a magazine "on-line," etc. Listed here are four databases with examples of what they have to offer.

**CompuServe, Inc.**  
5000 Arlington Centre Blvd.  
Columbus, OH 43220  
800-848-8990

Here's a sampling of some interesting information you can access through CompuServe:

- *Better Homes and Gardens/Cook's Underground*—A full text of recipes,

nutritional analyses, etc., from *Better Homes and Gardens* magazine. The *Cook's Underground* consists of users' submissions of recipes and discussions of food-related topics.

- *The World Book Encyclopedia*—the full text of its twenty-two volumes.
- UPI News Service

**The Source Telecommunicating Corporation**  
1515 Anderson Road  
McLean, VA 22102  
800-336-3366

Through The Source you can find information such as:

- CSI Career Network—employee and job listing service—resumes and job openings classified into 40 technical and managerial categories.
- Cineman Movie Reviews—contains over 3,000 reviews published in over sixty newspapers worldwide.

**Dialog Information Services, Inc.**  
3460 Hillview Ave.  
Palo Alto, CA 94304  
800-227-1927  
415-858-3785

Some of the databases available through Dialog are:

- American History and Life—citations and abstracts of literature on all aspects of U.S. and Canadian history and culture.
- Art/Bibliographies Modern—abstracts of books and articles in areas of modern art and design.

**Newsnet, Inc.**  
945 Haverford Road  
Bryn Mawr, PA 19010  
800-345-1301

Two of Newsnet's databases are:

- Air/Water Pollution Report, a newsletter.

- Behavior Today, a newsletter in the field of behavior and mental health.

In addition to the approximate subscriber fees listed for each database, bear in mind that you must include whatever the price of the time you're "on-line." If you use a network service, such as Tymnet, or Telenet, your phone costs are limited to the distance of nearest "mode"—the central phone exchange in your region. For example, if you live in Chicago, your phone call most likely will be simple "local-call." But, if you live in a rural, or outlying suburban community, you'll be paying local-distance rates or more while you are on-line, in addition to your database time charges. Both Tymnet and Telenet are expanding their services and most major metropolitan areas in the country now have one or both services.

### Networking

Here are some other examples of ways you can get outside your computer and into the world while not moving a step.

- *Electronic Bulletin Boards (BBSs)*—Message and information bases that hobbyists, organizations, users' groups and others are using—all over the world. You can even set up one of your own, but don't need to have one to use one. You can ask questions, leave messages, and find out up-to-date computer news. (Some use electronic bulletin boards as a dating service!) A message on a BBS of an educational organization might look like this:

MSG#0326 DATE: 10/02/83  
TIME: 18:26:49  
FROM: MARY ARNOLD:  
RIDGEFIELD, NJ EDUCATORS  
TO: ALL



## SUBJ.: CLASSROOM READING PROJECTS

Looking for (Atari) reading skills program for 1st grade students. Please leave message on this BBS if you can help.

You can reach a BBS by using public domain software (see Fall, 1983, *ATARI CONNECTION*, *Public Domain Software*) by making a simple phone call using your modem.

- **Networking with AtariWriter:** Two people can transfer files to each other when they both use *AtariWriter*. The two computer systems must include a disk drive and an acoustic modem. (Contact Atari for exact operating details or see Summer, 1983, *ATARI CONNECTION*). This way a writer in San Francisco and another in New York can collaborate with ease—and speed!

- **ComputerTown**—(The book by the same name is by Liza Loop, Julie Anton, and Ramon Zamora.) This is a concept brought—and coming—to actuality by various computer enthusiasts across the country. Described in this book is the "computertown" in Menlo Park, California.

The basic idea is to get people and computers together for a healthy exchange of ideas and to collectively explore the many possibilities, both for the individual and the community, of computers. In Menlo Park, the library is the central gathering place to use the computers; events held are creativity workshops, family days, and computer workshops for girls and women. While *ComputerTown* is not networking in the strict electronic sense, it is grassroots, informal learning. No matter where your project's base of operations might be, no matter how structured or easy-going its activities, the all-important ingredient that really makes a *ComputerTown* is people helping people learn about computers.

- **Users' Groups**—These are turning out to be very popular ways for computer users to get together and exchange ideas and information. Atari supports users' groups—Atari Computer Enthusiasts (A.C.E.)—all over the world. Not only do members share ideas, give and receive information about software and hardware, the group can be a terrific way for its members to access public domain (P.D.) software. P.D. software are programs written by computer users who are willing to share them with other computer enthusiasts. Someone interested in a certain program will probably have to pay the price of the disk—but that's it! You can "download" a program from the BBS, which means you can have a program sent to your computer. You can also "upload" by sending your own program to the BBS to share with others.

You can contact Atari directly for the name and address of the A.C.E. User Group nearest you.

### Suggested Reading:

**Directory on On-line Databases**, Cuadra Associates, 2001 Wilshire Blvd., Suite 305, Santa Monica, Calif. 90403. This is a complete listing of on-line databases, what type of information is available, including addresses and indexes.

**ComputerTown, Bringing Computer Literacy to Your Community**, Liza Loop, Julie Anton, Ramon Zamora, Reston Pub. Co., Reston, Va. 1983.

**Free Software for Your Atari**, David Heller, Dorothy Heller, Enrich/Ohaus, San Jose, Calif. 1983. This book is a delightful must for Atari users. It covers Atari Users Groups (and gives a very complete listing), public domain software, and electronic bulletin boards.

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## Word Processing

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**H**AVE YOU HAD it with "Correct Type"? Is your whine-out dry and flaky when you go to use it? Perhaps it's time to upgrade your typing equipment.

Using a word processor, or word processing program more specifically, is like using a typewriter and seeing all that you type displayed on a monitor in front of you. However, there is a lot more a good word processing program can do. Here's a sampling of its exciting capabilities.

- **Automatic carriage return.** No more hitting the return key. This saves an unbelievable amount of time.
- **Deleting and inserting words, phrases, or lines,** very easily and immediately being able to reformat a paragraph so everything's neatly justified.
- **Moving blocks of type** from one part of a page to another page and having the rest of the copy be reformatted immediately.
- **Search/Search & Replace Function**—Should you decide you want to replace U.S. with United States you can tell the computer to go ahead and do it. Or, a particular problem writers particularly run into is using a particular word—you get the drift—way too often. You can have the computer search for an over-used word or phrase and rewrite and insert something else as you go along.

A question you might want to answer right here is: Do you know how to type? If yes, great. If no, you'll do better with word processing if you learn. It'll make the job that much easier. (See "Educa-

tion" for my description of *Typo Attack*.)

The next question is: What are your needs? If you're a writer, someone who writes reports and proposals in conjunction with your work, if you have children in school who are at the report-typing stage, word processing will certainly add a measure of ease that you'll quickly grow accustomed to.

If you're a screenwriter, you have very specific needs in terms of a word processing program offering a variety of formats, and should do your shopping accordingly. But, specifically:

- The abundance of different page margins makes it essential that you find out how easy it is to set up multiple margins at the outset, see if you can change margins simply as you go along, and make sure that indents and margins don't get lost in a revision.

- Easy insertions and movements of type is crucial.

- Repaginating with ease is a must.

These are just a few things to look for. You'll want many of the other features already mentioned and, as always, it's very important to carefully think about what your own specific needs are.

Something you might want to consider is "what color type do you want to look at on the screen?" You can improve upon the "home computer blue-screen with fuzzy white letters" by investing in a professional monochrome (one color) monitor. Most "business monitors" project a neutral green text with precisely resolved letters. By simply switching your TV set for a green monitor, a long word processing session can suddenly become very easy on your eyes. You even have a choice between green or amber. Tests done in Europe showed the amber to be the easiest on the eyes, but other experts say it's what suits you best. (I personally find the green quite comfortable.)

Another issue is whether using a word processor will actually help you with your writing. "Will it make me a better writer?"

Some teachers feel word processing makes children more enthusiastic about writing, now that a lot of the drudgery and time-consuming tasks are out of the way. If the mechanical process is quicker, the theory goes, the students can spend that much more time with the written copy itself, and refining it. But a skillful teacher, enthusiastic about word processing, can weave the technical advantages of word processing into the creative writing process itself.

A line I'd like to quote here by Michael Crichton in *Electronic Life* is worth some thought. "There's not much difference between the blank page and the blank screen."

(continued on page 36)

# KIDBITS

## FIND THE BUG WINNER

by Myrna Rae Johnson

**A** DELIGHTFULLY DECADENT day to all of you diligent and dedicated debuggers! Ms. Mella Dramatick is here to navigate your path through the computer arachnid arena.

When last unseen, our bonsai bug, Buford, had weaseled his way into the webbed wonderworld of Spiff Spider. Buford's appetite for miscellaneous mischief sent Spiff into apoplexy. Our bug had cleverly fanfolded Spiff's web. Poor Spiff was so overwrought that he didn't realize his web was twisted into another dimension.

Somewhat simply put, the wee web was really there the whole time, but was being viewed from the slim side, rather than the fat front. Adding the L multiplier to the COS dimensionally rotated the web around 90°. And, like Dorothy and Toto in the *Wizard of Oz*, Spiff was really home all the time; he just didn't know it.



Illustrated by Lyonel S. Street



You see, the complacent COS wasn't a large enough number to plot, so it had to be multiplied by L in order to have its delightful debut.

SIN already had an L multiplier and since the COS is associated with the horizontal, SIN was larger than COS, making the web hang lethargically limp.

The Wizard of Oz made extraneous errors, and our weird wizard Menconi is no exception. Not-So-Menancing Menconi succumbed to Buford Bug's spell and left out a COLOR 1 statement at the end of line 10. Without this variable, Spiff's web was cloaked in basic black.

The mysterious magic of this mistake involves the Operating System. If you already had a graphics default set in your computer, you didn't need the COLOR 1 statement. And, if you did put the variable in, routinely ran the program, then removed it, Spiff's web could still be seen.

Congenial COLOR 1 is one of a fastidious few set-points in the graphics mode that actually change the Operating System. This readily redefined color variable does not change when you RUN or END your prize program—until or unless, of course, the Operating System is reset to GR.0 (graphics zero), or another dedicated default.

Our winner is little Marko Nasoni of Tucson, Arizona. An ambitious bug-finding type, Marko has academic aspirations:

*Dear Ms. M. Dramatick,*

*Spiff's web will be correct if you change lines 10 and 60 as follows:*

```
10 DEG :TX=159:TY=95:GRAPHICS 24:
  SETCOLOR 2,0,0:ADJ=0.9:COLOR 1
60 FOR I=1 TO SIDES:X=X+ADJ*L*COS
  (AN):Y=Y+ADJ*L*SIN(AN):DRAWTO
  X,Y:AN=AN+DAN:NEXT I:RETURN
```

*My Atari 800 computer is 14 months old. I learned SIN and COS last Thanksgiving. I am 12 and in the seventh grade at Amphi Jr. High in Tucson.*

*Last April, I was elementary programming champ in Arizona. I want to go to Stanford.*

*Marko Nasoni  
Tucson, Arizona*

I'm sure he'll do wonderfully well at Stanford. The Silicon Valley can always use some more dedicated debuggers.

In return for his speedy spearing of Buford Bug and his recognition of the nearly perfect Master Menconi's mistake, he will receive an Atari *Eastern Front* (1941) game cartridge.

## SPIFF'S WEB

```
10 DEG :TX=159:TY=95:GRAPHICS 24:SETCOLOR
  2,0,0:ADJ=0.9:COLOR 1
20 FOR SIDES=3 TO 22:L=30
30 X=TX-L/2:Y=1:GOSUB 50:NEXT SIDES
40 GOTO 40
50 PLOT X,Y:DAN=360/SIDES:AN=0
60 FOR I=1 TO
  SIDES:X=X+COS(AN):Y=Y+ADJ*L*SIN(AN):DRAWTO
  X,Y:AN=AN+DAN:NEXT I:RETURN
```



# FIND THE BUG

## Avant-Garde

by Ted Richards and  
Cassie Stahl

**A** LIEN ARTISTS in a distant galaxy are having an electronic art show. Abstract shapes of light flash through three-dimensional magnetic fields. These artists are unlike any we have ever known here on earth. They're computers — avant-garde artist-computers.

As avant-garde artists with a bold, new vision, they face a tough struggle to have their art accepted. They're also short on memory circuits. And, like artists everywhere in the universe, these computer-artists must work at odd jobs to support their art.

Your Atari computer, known for its own unique graphic art talents, has tried to tune in this intergalactic electronic art performance, but to no avail. "Conservative Art Bugs" are interfering with the faint signals from afar. We suspect these Art Bugs are making order out of the eclectic chaos—turning dazzling forms into dull little flashing letters in predictable colors.

To find these Art Bugs, first type the "Bug Program" into your Atari computer, *exactly* as it's listed on the page. If you have trouble, refer to the "Computer Comfort" article on page 55. After you've

typed in the program, type RUN and you'll see the damage the Art Bugs have done to the avant-garde art circuit.

Once you've exterminated the Art Bugs, you and your Atari computer can sit back and enjoy the experience. If you want to view the art longer, just press the [START] button on your computer. The art will remain on the screen until the [START] button is released. New art will appear seconds later.

### AVANT-GARDE

```
30 DIM X(8),Y(8),C(4)
40 POKE 77,0
50 S=INT(3*RND(1)+1)*R+1
60 IF S=3 THEN X=40:Y=24:GOTO 90
70 IF S=5 THEN X=80:Y=48:GOTO 90
80 IF S=7 THEN X=160:Y=96
90 GRAPHICS S+16
100 FOR A=1 TO 8
110 X(A)=INT(X*RND(1))
120 Y(A)=INT(Y*RND(1))
130 NEXT A
140 FOR A=1 TO 4
150 C(A)=INT(3*RND(1)+1)
160 NEXT A
170 COLOR C(1):PLOT X(1),Y(1):FOR A=2 TO 5:DRAWTO X(A),Y(A):NEXT A
180 COLOR C(2):PLOT X(6),Y(6):DRAWTO X(7),Y(7):DRAWTO X(8),Y(8):DRAWTO X(1),Y(1):DRAWTO X(2),Y(2)
190 POSITION X(1),Y(8):XIO 18,#6,0,0,"S:"
200 POKE 765,C(3):FOR A=2 TO 6 STEP 2:PLOT X(A),Y(A):DRAWTO X(A+1),Y(A+1):NEXT A
210 POKE 765,C(4):POSITION X(1),Y(8):XIO 18,#6,0,0,"S:"
220 POKE 765,C(1):POSITION X(2),Y(4):XIO 18,#6,0,0,"S:"
230 FOR W=0 TO 190:NEXT W
240 IF PEEK(53279)=6 THEN GOTO 220
250 GOTO 40
```

## FIND THE BUG CONTEST

If you can find the bug and fix it, send your corrected program to ATARI CONNECTION along with a short story about yourself. If your entry is correct, you'll qualify for our special Find The Bug Prize Drawing for *Excalibur*, the ultimate new computer game from the Atari Program Exchange.

If you're a winner, we'll print your story along with your corrected program in the next issue.

Send your entry to:

FIND THE BUG  
c/o ATARI CONNECTION  
P.O. Box 3427  
1349 Moffett Park Blvd.  
Sunnyvale, CA 94088-3427





# TIPS FROM A YOUNG PROGRAMMER

## Make Your Computer Sound Like Different Instruments

by Teddi Converse

When Danny Miller got his Atari 400 computer a year and a half ago, he started learning how to program right away. Since then, the 15-year-old tenth-grader from Ontario, Canada, has written several programs that explore computer sound and graphics. Danny does his programming in BASIC, PILOT and machine language. He keeps a journal with articles about Atari computers, collects programs he's found that run on his Atari 400, and has become the technical advisor-in-residence to his computer-using friends.

During the school year, Danny helps teach younger students how to program. In addition, this summer he and two friends worked on a program that would help schools update their daily schedules. The last time we talked to Danny, they had sold their software to a few schools. "I'll get a third of the profits," Danny heaved. "I'm pretty excited about that." "I'm also working on a couple of programs for our board of education."

Danny's goal these days is to buy a disk drive. "It takes forever to load and save on a cassette, eh?" says Danny in his Canadian accent. "I'm just dying to get a disk drive." He hopes to purchase one soon with the money he earns from his software sale.

Danny was happy to send ATARI CONNECTION some of the programs he's written, demonstrating how to make flute, accordion, piano and organ sounds with the computer. His arrangement of Moussorgsky's "Pictures at an Exhibition" will brighten up your

music library as well as your program collection.

Just follow Danny's instructions for typing in the programs, and you can add Danny's knowledge of computer programming to your own.

### Atari Sound Synthesizer

First type in Program Number One. Be sure to SAVE it as soon as you finished typing it — don't RUN before you SAVE! If you've made any typing errors this kind of program could "lock-up" when you RUN it, causing you to retype the entire listing. You're not going to be RUNNING this program quite yet, so SAVE it.

Next, you need to type in Program Number Two to hear your Atari computer sound like an accordion, a piano and even a computer! When you've finished typing in Program Two, SAVE it.

Now that you have both programs SAVED, you can make them work together by following these two steps:

1. LOAD Program One — when the READY prompt appears, type RUN, then [RETURN]. After you've typed [RETURN], wait until the READY prompt appears again.

2. Now, LOAD Program Two. When the READY prompt appears, type RUN, press [RETURN] and you'll hear the Danny Miller's Atari "Synthesizer."

#### Program One

```
10 DATA
104,201,6,144,254,201,10,176,250,5
6,233,5,141,248,6,160,0,104,104,15
3,239,6,200,204,248,6,208,245,104,
104
20 DATA
141,243,6,104,104,10,10,10,10,141,
244,6,104,104,24,109,244,6,141,245
,6,104,104,141,246,6,104,104,141,2
47
30 DATA
6,160,0,162,0,189,239,6,153,0,210,
200,200,232,236,248,6,208,242,173,
246,6,201,0,240,22,173,244,6,174
40 DATA
246,6,32,197,6,32,188,6,24,105,1,2
05,245,6,144,239,240,237,173,245,6
,32,197,6,173,243,6,201,0,240
50 DATA
16,174,243,6,169,0,133,20,165,20,4
1,255,240,250,202,208,243,173,247,
6,201,0,240,20,173,245,6,174
60 DATA
247,6,32,197,6,32,188,6,56,233,1,2
05,244,6,208,239,160,0,162,0,173,2
44,6,153,1,210,169,0,153,0
70 DATA
210,200,200,232,236,248,6,208,237,
96,160,128,136,208,253,202,208,248
,96,160,0,72,153,1,210,200,200
80 DATA
152,74,205,248,6,240,4,104,24,144,
239,104,96
```

```
90 FOR Z=1536 TO 1753:READ A:POKE
Z,A:NEXT Z:NEW
```

#### Program Two

```
10 L=1000:OIM A$(40):POKE 710,0
20 RESTORE L:READ A$,A,B,C,D:PRINT
">";A$:RESTORE 1100:FOR Z=1 TO
13:READ
E,F:F=F*A:DUM=USR(1536,E,F,10,B,C,
0)
25 NEXT Z:FOR Z=1 TO 13:READ
E,F,G,H,I:I=I*A:DUM=USR(1536,E,F,G
,H,I,10,B,C,0):NEXT Z
30 L=L+10:IF L<1050 THEN 20
1000 DATA COMPUTER,.8,8,0,0
1010 DATA ACCORDIAN,.6,8,9,3
1020 DATA PIANO,.6,8,0,9
1030 DATA ORGAN,.5,8,9,9
1040 DATA FLUTE,.7,4,12,1
1100 DATA
81,48,91,48,68,48,60,24,45,24,53,4
8,60,24,45,24,53,48,68,48,60,48,81
,48,91,48
1110 DATA
81,100,137,162,48,91,121,144,182,4
8,68,108,137,162,48,60,72,121,182,
24,45,72,121,182,24,53,72,91,215,4
8
1120 DATA
60,72,121,182,24,45,91,182,182,24,
53,68,91,137,48,68,81,108,162,48,5
0,81,121,243,56,60,72,91,182,66
1130 DATA 68,91,108,137,80
```

# ATARI SINGS YOUR FAVORITE SONGS!!!

THE Original VOICE BOX Speech Synthesizer by the ALIEN GROUP has received rave reviews:

**MICRO COMPUTING**—"The VOICE BOX injects an endearing personality to your computer. The possibilities are enormous."

**COMPUTE**—"The VOICE BOX offers more human-like tones and does not blank out the screen."

**CREATIVE COMPUTING**—"English text and phonetic code may be freely intermixed rather than requiring separate modes as is the case without exception with every other speech system. A mode called talking face displays an animated face with impressive lip sync animation."

**ANTIC**—"There is a great potential for teaching children to spell and an added dimension to games overall. I believe the VOICE BOX is well worth the price tag."

**ANALOG**—"For ATARI owners who want to add speech to their programs, the Alien Group VOICE BOX is probably the best choice."

**POPULAR SCIENCE**—"The speech quality is excellent. Besides creating speech, the software has a bit of fun with graphics."

and on the new VOICE BOX II.....

**TIME MAGAZINE**—"Machine of the Year" "The VOICE BOX by the Alien Group enables an ATARI to say aloud anything typed on its keyboard in any language. It also sings "Amazing Grace" and "When I'm 64" or anything else that anyone wants to teach it.



INCORPORATE THE SINGING HUMAN FACE  
INTO YOUR PROGRAMS AND GAMES



VOICE BOX II  
Speech & Singing Synthesizer

To order by mail send a check or money order to the ALIEN GROUP for \$169. Then, try the VOICE BOX II for 10 days, and if it isn't the finest value you've ever seen in a computer peripheral, the most challenging and provocative addition you've ever made to your system, return it in its original condition for a full refund.

THE ALIEN GROUP  
27 West 23rd Street (212) 741-1770  
New York, NY 10010

The New VOICE BOX II for ATARI plugs into the serial port of the ATARI 400/800 with sound coming out of the TV/monitor. 48K DISK is required. It has all of the features of the original VOICE BOX plus many exciting new hardware and software features:

- The ability to sing with voice and 3 part music.
- A library of 30 famous songs.
- A comprehensive music system that allows the user to easily enter or modify new songs.
- Software that can convert the bottom two rows of the ATARI keyboard into a piano with a range of 3½ octaves using the shift and control keys.
- Programmable musical sound effects such as tremolo, vibrato, glissando and click track.
- A singing human face with lip-sync animation designed by Jerry White.
- A talking or singing ALIEN face with software that allows the user to change the face and 8 mouth patterns as he sees fit.
- The ability to speak with inflection and feeling.
- Can speak in a foreign language with correct foreign spelling as input.
- A talk and spell program by Ron Kramer. Users can program any vocabulary for this spelling game. In fact, this program can even speak in a foreign language like French, where the user must spell the correct word in English, or vice versa.
- GREEN GOBLINS—A talking arcade game by John Wilson.
- Random Sentence Generator—An amusing grammar game that helps teach school children to identify parts of speech and recognize a variety of sentence structures.
- NUMBER SPEAK—A subroutine by Scott Matthews that converts up to a 9 digit number into normal English pronunciation. Ideal for building your own math games.
- STUD POKER—A talking poker game by Jerry White.
- The screen never blanks out while talking or singing.
- Singing or speaking subroutines can be incorporated into your programs, requiring as little as 100 bytes of RAM plus 5 bytes for each word.
- Price \$169.00 includes VOICE BOX II and all of the above software.
- Inquire about our discounts for educational institutions.

**ALSO AVAILABLE AT LEADING COMPUTER STORES THROUGHOUT THE WORLD.**

Atari is a registered trademark of Warner Communications.



# Logging on to a Better Job

by Paula Polley

**A**N AD IN ONE of Silicon Valley's major newspapers depicts a lone function key. On it is printed four letters: J-O-B-S.

The ad is for a new electronic job listing database called CONNEXIONS. This innovative new approach to job placement is available on a telecommunications subscription basis to both employers and employees.

Initially tested in the Boston Area, CONNEXIONS has proven to be a valuable tool for the fast-moving high technology industry. The service is currently geared to assist job-seekers in the fields of electrical engineering, programming, and computer science. But the number of job listings for other professions is sure to grow.

Though CONNEXIONS offers many unique features, the concept is quite

simple. Prospective employers list their current job openings. As a subscriber, you can examine these job listings and—if you see an interesting job—electronically send your resume to the company offering the position. Only employers to whom you release this information have access to it.

By asking a few key questions about your field, subfield, geographic preferences and salary range, CONNEXIONS matches you with available openings, some of which may not be posted elsewhere.

As opposed to a newspaper listing, where you are lucky to find three or four lines of information about a company, CONNEXIONS gives you three or four pages of job information. In addition to a detailed description of the job, you'll find out the name, location and nature of the company. In some cases the CONNEXIONS listing will reveal the

kind of information that a placement service might withhold, like whether the company has plans to move, and if so, to where.

In addition to offering a select of career fields, CONNEXIONS also allows you specify job listings by geographic regions. This feature is especially valuable to someone who's planning a move and doesn't have access to information about the job market in other parts of the country.

With a modem and Atari *TeleLink I* software, you can use your Atari home computer for a free on-line introduction to CONNEXIONS. (See box for directions.) If you like what you see, you'll have the opportunity to subscribe immediately to the service by keying in your credit card number.

Some of the activities you can select from CONNEXIONS' main menu include: viewing job listings, using the electronic bulletin board of job fairs and other announcements, and creating and revising your electronic resume.

If you decide to view job openings, you'll be asked to answer a round of multiple-choice questions that help the computer match you to the right jobs. You'll choose from a master list of career fields which will take you to a second list of subfields. Then you key in geographic regions followed by your salary

# RCA Telex for Atari Computers

by Alan Garratt

**I** just finished "talking" on my Atari computer to our office in Guam, 8,000 miles across the Pacific, from my home in New Jersey.

I also sent a message to our office in Lausanne, Switzerland.

It wasn't some international electronic mailbox service I used; it was telex, a service that RCA Globcom introduced in 1950. Now RCA has made it available to anyone who has a personal computer and the necessary communications software.

The Atari computer fills the bill nicely. Especially with the recently introduced *Communicator II Kit* which contains the *TeleLink II* cartridge, and Atari 835 Direct Connect Modem.

RCA Telex connects with businesses all over the world. If you need telex in your business, your Atari computer can save you money and time. It's not that expensive, either. A five-minute call to Guam, for example, costs \$11.05 for about 330 words.

Telex is typed communications between teletypewriters. Every letter you type is typed out in "real time" on the other machine. You've probably seen teletypewriters in the offices of major businesses and you may still hear them clicking in the background during news broadcasts. There are about 1.5 million installed in businesses and government offices worldwide — including about 200,000 in the United States.

In recent years a different kind of telex service, called store-and-forward,

has become popular. You send your telex to the telex computer exchange. It stores your message, transmits it as soon as the machine you're sending to is available and sends you a confirmation when it delivers the message.

Store-and-forward telex offers many advantages. It allows a number of enhancements to the service including time-of-delivery choice, multi-address messages and more.

Using your Atari computer as a telex terminal has been made possible by an interface RCA Globcom installed in its computer telex exchange. The interface translates the ASCII code (usually sent out by computers) into Baudot code and then passes the message to the telex computer as an ordinary telex. This service is available both for store-and-forward and for real-time telex.

What you need, besides your computer, is the communications software (such as *TeleLink II*), a modem and, although it's not absolutely necessary, a printer to print out your incoming message.

If you don't have access to a teletypewriter, RCA Globcom offers you an RCA DataBank, a telex mailbox to receive all your incoming messages

range.

In seconds, the system tells you how many jobs it's found that match your criteria. It even tells you how many came close to matching and why they didn't. For example, it may tell you that one job matched your field, subfield, and salary but not your geographic locations. At this point you have the option to return to the selection process and broaden your requirements or going on to another function.

The CONNEXIONS listings range from openings in large Fortune 500 corporations to upstart venture companies. A two-hour subscription to the CONNEXIONS service costs \$15.00. After adding up the costs of purchasing newspapers and trade magazines, preparing and mailing resumes, telephone searches and transportation expenditures, you may find that in addition to its other benefits, this service could also save you money.

But while it may be economical, even this electronic job search can be frustrating. As in any job hunt, you have to fill out lots of forms, hoping that you've spelled everything right. But the text editor used to correct resumes and the menu that lists appropriate job offerings are cumbersome and time-consuming for inexperienced telecommunicators. It's easy to get

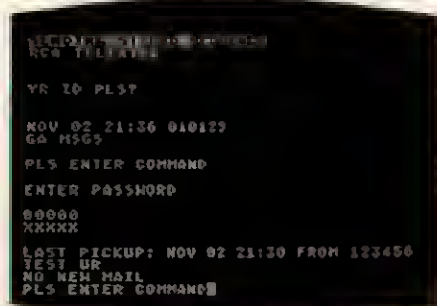
locked into a closed loop in the process—and difficult to ESCAPE—unless you QUIT the session altogether.

And despite assurances to the contrary, CONNEXIONS recently listed at least one blind ad—a job listing without any company name or address. You have to wonder who is doing the hiring—and hope it isn't your boss!

#### MAKING CONNEXIONS

1. Place the Atari TeleLink I cartridge in your computer. Set the duplex switch on your modem to "Full."
2. Dial the Tymnet or Telenet number in your area, or call CONNEXIONS at 800-JOB-DATA to find out the data-line closest to you.
3. Once connected to the local CONNEXIONS number, hit the [RETURN] key three times.
4. You'll see the @ sign on your screen. Now enter C (space) 60366 [RETURN].
5. A prompt will ask for a user number. Enter JOB30006. Good luck!

*Paula Polley is a Writer for the Creative Services Department of Atari Products Company.*



The retrieval of mail from an incoming telex Databank using the TeleLink II cartridge. In this case, telex messages had just been picked up.

and confirmations of the telex messages you sent by store-and-forward.

The TeleLink II cartridge makes it easy. If you also have the Atari 835 Direct Connect Modem, the number you dial to send telex may be automatically dialed after you enter it in the memory of the TeleLink II cartridge. And all password exchanges necessary to identify yourself as a registered telex customer and to retrieve your incoming

telex messages from your DataBank may also be kept in the memory of the TeleLink II cartridge.

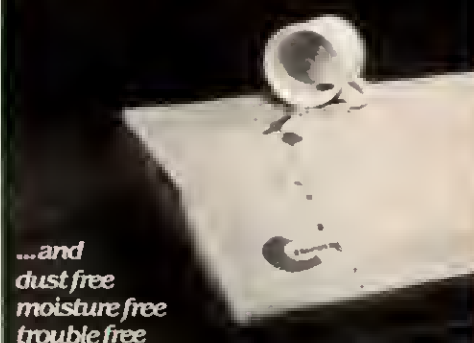
To start using your TeleLink II cartridge for telex service (after you have registered as a customer), you first have to make a decision. There are three types of access you may want and only two numbers and password sequences that you may install in the cartridge.

There is both real-time and store-and-forward telex, each of which requires a different phone number. There is also the retrieval of your incoming telex messages which, while it uses the same number as store and forward telex, requires an additional sequence of passwords. Real-time telex may be handled manually since there are no passwords to use before you start using the keyboard.

After you have installed the TeleLink II cartridge in the cartridge slot of your Atari computer, press the [RETURN] key. This will offer you a menu selection of six numbers. Choosing number five allows you to edit the two predetermined phone numbers and password sequences you wish to set up.

(continued on page 30)

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# Computer Ethics

## TO COPY OR NOT TO COPY?

by Teddi Converse



**T**HE MEDIA HAS recently inane much of young computer whiz kids who have managed to break into various business and government computer systems around the country. They cruise the telecommunications networks to gain entry into corporate or government data banks, and tamper with files or erase information altogether.

Most of these adventures begin as seemingly harmless pranks or intellectual challenges for their perpetrators. But many state and federal officials are reacting to the surge in computer mischief by introducing bills that would make these capers serious crimes—sometimes mandating jail

sentences, large fines or both.

Just as parents and educators teach children the moral values expected of responsible members of society, many feel it's time to emphasize the same sense of ethics about computer use.

The most controversial issue surrounding computer education is software copying. Not only do students who wish to expand their collection of video games or other computer programs illegally copy software, but so do parents and teachers.

The problem teachers face is understandable, especially at a time when schools are plagued by tight budgets and chronic financial troubles. Most schools can't afford to buy multiple

# "AM I TEACHING MY CHILD THAT IT'S OKAY TO CHEAT A LITTLE AS LONG AS YOU DON'T GET CAUGHT?"

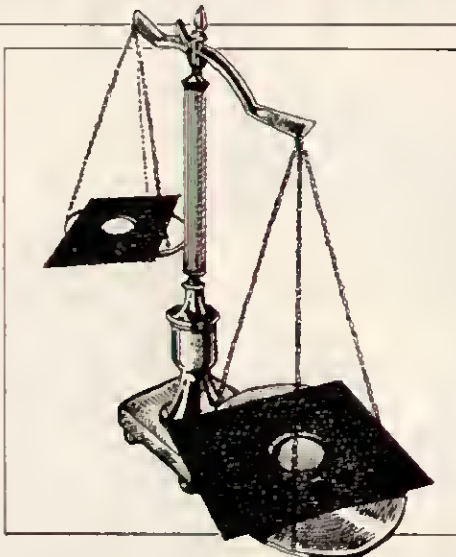
copies of software programs for their classes. And, many teachers plead that the nature of software use in a classroom demands they have backup copies of programs. Inexperienced students tend not to understand the fragility of the cassette or diskette program — dirty fingers placed on cassette tape or direct sunlight on a diskette can wipe out a costly computer program in seconds.

But the producers of educational software products pay each time their products are pirated. The *Wall Street Journal* has estimated that illegal copying of software costs the industry between 6–18% of total annual sales, or between \$12 and \$36 million a year. As quality educational software products become less profitable to produce, vendors will be less likely to enter the market.

"I feel a sense of moral outrage at people who illegally copy software," says Dick Ricketts, managing editor of *The Computing Teacher*. "The issue is basically that people are supposed to be honest, and when people are honest, things are better. Copying software or gaining unauthorized entry into a computer system is simply wrong. And not only are the kids who copy programs in the wrong, the educators who do it are setting a terrible example for the students. In effect, they are defrauding society by not reflecting the true cost of education. No argument excuses the practice of computer abuse."

Jane Rainville, computer coordinator at Evanston Township High School in Illinois, has come up with one solution to the problem of unethical computer use in her school. Freshman students who enroll in the Introduction to Computer Technology course receive one unit on ethics. "We address tampering with a person's program or destroying something that he or she's done on the computer the same as we would treat destroying another's property in an art class," she explains. "We stress that they are electronically destroying somebody's property, and it's the same as destroying any other type of property. We also discuss plagiarizing another person's computer program — say, passing around an English paper someone has written with a word processing program.

"We've even had a case of students copying software programs and selling them," she continues. "But we keep our eye on the kids who are bright enough to crash our computer system or those



who look as though they might be tempted to copy a program. Then we confront them individually. Once I've talked to them about it, if I catch them doing it anyway, I might do something like turn off the electricity in the room when they're hard at work on a program they've been writing. This really lets them in on what I'm talking about. They see how it feels to lose their program or have it destroyed."

Recently, the International Council for Computers in Education issued a policy statement on educational software use. It asserts, "The educational software market must overcome two critical problems: allowing educators access to quality software in usable, cost-effective forms while at the same time realizing vendors are suffering from unauthorized copying of software and documentation." The council suggests that educators adhere to copyright laws and publisher license agreements and that "budget restraints do not excuse illegal use of software." In addition, the council states that it's the responsibility of educational software producers to provide a back-up copy with every purchase of a program, and to offer multiple-copy pricing as well as opportunities for educators to preview educational software.

Science Research Associates, an educational software company, has resorted to requiring purchasers to sign a licensing agreement in order to protect products. "It's basically a very simple agreement," says John Frey of SRA. "It says that the purchaser understands the copyright laws, and will use our product under the same guidelines that we

would use the product—agreeing not to change the code of our product or allow outside agencies to copy it or change the code." According to Frey, the decision to use such agreements was in response to the vague and unenforced copyright laws. "We felt we had to take the extra step to prevent our products from being proliferated in the marketplace. The agreement helps keep our cost down and I think educators appreciate that."

Atari offers a virtual life-time guarantee on its educational software products, providing new copies of any software that has been damaged providing the original is returned. "We're also investigating a number of other alternatives," says Mike Knoblauch, head of educational software acquisition and development.

Many parents say that having illegally copied software at home is just as detrimental to a child's sense of ethics about computers and computer use as seeing software copied in school. Ruth Ellsworth, an active member of the Eugene, Oregon Atari Users' Group, made it a family policy that nothing enter her home that is not legally obtained or purchased when the son of a family friend faced prison after having learned the subtle lesson that it was "okay to steal things his parents wanted."

"Probably the most important reason those of us with families purchase a computer is to provide the opportunity for our children to learn," says Ellsworth. "But if you have pirated software in the home you might ask yourself, 'Am I teaching my child that it's okay to cheat a little as long as you don't get caught? Am I introducing to my child the thrill of possessing stolen goods, or am I subtly giving him or her the arrogant attitude that I can beat the system and get away with it?'" She firmly asserts that piracy of software will continue until "we, the users, refuse to participate in it."

No doubt the issue of ethics is becoming more serious as computers become increasingly pervasive in our lives. One of the first places to stress the seriousness of software copying and unauthorized entry into computer systems is at school and at home.

*Teddi Converse is a senior writer in the Creative Services Department of the Atari Products Company.*





# PROFESSIONAL ATARIWRITER

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BY LEN LYONS

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IF YOU'VE DISCOVERED word processing with *AtariWriter*, you know that it's a reliable antidote for "writer's cramp." (Sorry, there's no proven antidote yet for "writer's block.") *AtariWriter* takes out of your hands the tedious, tiring task of retyping, which used to be necessary after every improvement of your manuscript. Now, you can delete text, move paragraphs, and "cut-and-paste" with abandon, knowing that *AtariWriter* will handle the reformatting automatically.

For most of us, however, *real* writing involves more than grinding out text, polishing it, and formatting it into paragraphs. That's because *writing* (assuming we're not talking about *penmanship*) is abstract and virtually nonexistent, something like "the average family," "the typical consumer," and "normal circumstances." In the real world, writing means research and term papers, poetry, short stories, and film scripts, business correspondence, magazine articles, and love letters. This article offers suggestions for applying the power of *AtariWriter* to some of these documents.

Even if the examples ahead aren't tailored precisely to your needs, you may find you can adapt the techniques to whatever you're planning to write.

For practice, reproduce the examples on your screen and print them to make sure you've mastered the techniques. Then apply them to your real-world writing tasks. Have your *AtariWriter* manual nearby for reference.

There are two things to keep in mind when working through the templates ahead. First, the "Control and Function keys" you must press to enter commands are illustrated by placing brackets around the keys. You enter a command by pressing the Control key and the appropriate letter key. For example, to center a line of text, you press [CTRL]—the Control key—and the letter C at the same time. On your screen, you'll see an inverse-video C, then your text. The text won't be centered on your screen, but when it's printed, it will be automatically centered on your paper. These control commands don't print—they simply "control" or "command" your printer to perform special functions.



Here's a more complete example. To print elongated centered text, type in the following:

```
[CTRL]C [SELECT]E Word Processing
```

In this example, you'll see an inverse-video **C** on your screen and a large, gold-colored **E**, set together with no spaces in between, followed by the text, Word Processing. The spaces placed between the command symbols in this article make the examples and templates easier to follow and read, but when you enter the commands, please leave these spaces out. Just enter the commands one after another.

Second, you might want to preview the practice formats prior to printing the text by using [OPTION]P which allows you to "Print Preview" the actual format you've created. Unfortunately, you can't edit in this mode.

Remember, that certain formatting options do not show up during the print preview: elongated text; print style; centered text; text blocked right; justified right margins; subscripts and superscripts; underlined text (appears in inverse video); and double-column printing (right column appears under left column).

### Expanding Your Character

For term papers, reports, or chapter titles, centered text with extra-large characters can look impressive. Under the top (formatting line) of your screen, you type:

```
[CTRL]C [SELECT]E Word Processing  
[RETURN]  
[RETURN]
```

Then print the results:

WORD PROCESSING

The two [RETURN]s under the title are inserted to leave some space between your title and the main body of the text. If you have a letter-quality printer, you can't get elongated characters because they're not on your printwheel. In this case, simply omit the [SELECT]E and center the title.

### Do-It-Yourself Letterheads

Centering text can build an instant letterhead that you can save on diskette and insert with the "merge text" command. Merging text [OPTION]L allows you to load a text file from your diskette into the file that's on the screen. Create a sample letterhead by typing the lines below:

```
[CTRL]C BlowRite Balloon Co.  
[RETURN]  
[CTRL]C 2543 Rubber Tree Avenue  
[RETURN]  
[CTRL]C New York, New York 10001  
[RETURN]  
[RETURN]  
[CTRL]C We're proud to be full of hot air!  
[RETURN]  
[RETURN]
```

Save this file under the filename **LETTER.HED**. The next time you write a letter, begin with **CREATE** file. Then use [OPTION]L and respond to the **LOAD DEVICE:FILENAME** prompt with **D:LETTER.HED**.

(Of course, the diskette containing that file has to be in your drive.) Your letterhead will appear on the screen in a few seconds:

```
BlowRite Balloon Co.  
2543 Rubber Tree Avenue  
New York, New York 10001  
We're proud to be full of hot air!
```

Then go ahead and write the rest of the letter. Save the letter under its own filename. Your **LETTER.HED** file remains on diskette for the next occasion.

### Page Numbering

Another way to improve long documents is by putting "running heads" and page numbers on each page. There are running heads at the top of the pages in most books, so you can thumb through it and locate discussions of specific topics. In word processing jargon, running heads are called "headers." There are also "footers" that appear at the bottom of the page, if you prefer that style.

Here's a sample running head for a hypothetical term paper on the subject of European art. The header below is also "blocked right."

```
[CTRL]C [CTRL]C [CTRL]H  
European Art [SHIFT]8 [RETURN]
```

The first page of the term paper will look like this:

```
European Art 1  
Subsequent pages will be numbered consecutively.
```

There's a fine point, though. If you're printing two separate files that are meant to have consecutive page numbers (for example, chapters in a thesis), you'll want the first page of the second file to start with a number greater than one. Suppose there are ten pages printed in the first file—Chapter 1. To start the second file—Chapter 2—on page 11, type [CTRL]Q 11 on the next line. Of course, you won't know the number that follows [CTRL]Q until you've already printed out the first file, or used "print preview" to see how long Chapter 1 is.

If you're chain-printing files, the pages are automatically numbered consecutively. But you must still add the header command, the number symbol, and [RETURN] [CTRL]H "Header" [RETURN]. Besides, the header will probably change in the second chapter, just as it changes for each chapter of a book. How to chain-print files is explained in the *AtariWriter* manual (p.34).

### Formatting Footnotes

The easiest way to cite your sources formally is by listing them in footnotes at the end of the document you've written, or at the end of each chapter. But you can also place them at the bottom of the page, if you leave room. Type a solid line from the left margin across ten columns.

As a sample, let's footnote the following quotation, from the paperback edition of an entertaining and provocative book about the impact of microcomputers on society:

By the late 1980s, if data compression techniques continue on their present curve, it will be possible to store very large books,

perhaps even sets of books, on a microchip and a whole library in a space about the size of one of today's paperbacks.<sup>1</sup>

To cite the source, type the following:

```
[CTRL]S2 [CTRL]I5 [SELECT] [UP AR-  
ROW]1 [SELECT] [DOWN ARROW]  
Christopher Evans  
[CTRL]U The Micro Millennium  
[CTRL]U (New York: Washington Square  
Press, 1981), p. 115. [RETURN]
```

Use [CTRL]S2 for single-spacing, and [CTRL]I5 to indent five spaces. When you print the sample, you should see:

<sup>1</sup>Christopher Evans, *The Micro Millennium*,  
(New York: Washington Square Press, 1981),  
p. 115.

If your next footnote cites the same source and page number, use *Idem.* after the superscript.

If your next footnote cites the same source, but a different page number, use *Ibid.*, p. 35 after the superscript.

If you cite a source more than once, but not in consecutive footnotes, use *op. cit.*, between the author's name and the page number.

## Move It or Lose It!

Since a file holds the equivalent of about 13-20 double-spaced pages of text (depending on how much RAM your computer has), writing long documents requires chain-printing files—printing files consecutively with consecutive page-numbering.

Suppose you have the first chapter of a novel saved in two files: CHAPONE.001 and CHAPONE.002. What happens when you want to take a paragraph or so from one file (CHAPONE.001) and move it to a page located in another file (CHAPONE.002)? If you write long documents, you can count on this need arising eventually.

Although the manual neglects to mention it, *AtariWriter* does enable you to move text between files. The trick is to delete the text you want to move, which saves the text in the buffer memory. Save the file from which you've selected text. Then load the file you're going to move it to, locate the cursor where you want the text to appear, and press [START] [INSERT], which restores the "deleted" text in its new location.

Here's the procedure in more detail:

1. Using [CTRL]X at the beginning and end of the text, define up to 30 lines of the text in CHAPONE.001 to be moved as a block.
2. Press [OPTION] [DELETE] [BACK S] to "delete" the block. But remember, *this also saves the block in the buffer memory.* (NOTE: Do not delete or move any more text until you have completed Step 5 below. If you don't move it right, you'll lose it.)
3. Press [ESC] for the menu and **SAVE** the file CHAPONE.001 onto disk.
4. Then **LOAD** CHAPONE.002—the file into which you want to move the block.
5. Press **E** to edit the file, and locate the cursor where you want the block to appear. Then press [START] [INSERT]—this restores whatever is in the buffer to the screen. Remember to **SAVE** the revised CHAPONE.002.

## Justifying Your Rights

Right justification arranges your text so that it's flush with the right margin, just as it is with the left. Most books are typeset with a justified right margin. The alternative is called "ragged right," which is the way your typewriter prints text and the way the *AtariWriter* manual is typeset. *AtariWriter* justifies text by inserting "soft" spaces between words to bring every line (except lines ending with [RETURN]) out to the right margin.

*AtariWriter* is preset for a ragged right margin ([CTRL]J 0), but you can change the setting "globally" (for the entire document) or anywhere in the text. You might want to right-justify a block of text that you're citing within a larger report. Here's a sample in the field of child development. Start this example with double-spacing (S4) at the top of your screen.

```
[CTRL]P—The amount of learning that occurs during  
the first few months of life is difficult for the adult to im-  
agine, as Selma H. Fraiberg emphasizes in her classic  
work, The Magic Years: [RETURN]  
[CTRL]S2 [CTRL]J1 [RETURN]
```

A project of such magnitude in academic research would require extensive laboratory equipment and personnel; to be fair about it, it has taken just that to reconstruct the experiments of the infant. [RETURN]  
[CTRL]S4 [CTRL]J0 [RETURN]

Whether or not to justify your right margins is partly a matter of taste. Except for typeset work and special uses, such as the long quotation above, most documents will look more natural with ragged right margin.

NOTE: Except for the added formatting commands, the example above represents how the text will look *when it's printed*. [CTRL]J1 turns on the right-justification command; [CTRL]S changes the line spacing. On your screen, however, the text always appears single-spaced and with a ragged right margin.

## Search and You Shall Find

Use the search and replace option [SELECT]S when you discover a potential repeating spelling error, or when you want to find a specific part of the text in a long document. Suppose you have written a 10-page document on European architecture and suddenly notice—to your chagrin—that *roccoco* has one too many c's. Bring the cursor to the top of the file with [SELECT]T, and then:

```
You type: [SELECT]S  
A: [SEARCH] FOR:  
You type: roccoco [RETURN]  
A: REPLACE WITH:  
You type: rococo [RETURN]  
A: REPLACE GLOBALLY, Y/N?:  
You type: Y [RETURN]
```

You can also use this function to find a section of the text to improve upon. Suppose you want to add some information to a ten-page composition about the Gaudi buildings in Barcelona. Don't scroll through the text on screen looking for that section. Search for the word *Gaudi* or *Barcelona*. You'll be there in no time.



## Fill in the Blank Letters

If you own or operate a small business, you know that most written correspondence to your clients or customers is repetitive. You write essentially the same things to each of them, with only a few, but crucial, differences: name and address; pricing, merchandise, or billing information; and perhaps a sales-oriented line or two addressing their special needs.

Here's a sample of some imaginary correspondence from a start-up shoe company, Sunshine Shoes, of Sarasota, Florida. Suppose the President, Mr. Jones, wants to remind fifteen of his twenty retail customers that their payments are overdue. He also wants to be specific about the invoice number and the outstanding balance.

Rather than type fifteen separate letters, which might take him over an hour, Mr. Jones creates one form letter that he can customize during printing with the [OPTION] [INSERT] command. The [OPTION] [INSERT] command allows you to use your keyboard as a typewriter—to insert optional information during the printing process.

[CTRL]C A Friendly Reminder

[RETURN]

[RETURN]

TO: [OPTION] [INSERT]

FROM: Sunshine Shoe Co.

RE: Invoice # [OPTION] [INSERT]

[RETURN]

[CTRL]P Our records show that we have not yet received your payment for the shipment billed under the invoice number above. Please remember that we can extend credit only to those stores that remit in full within 60 days. Your balance due is [OPTION] [INSERT] [RETURN]

[CTRL]P We look forward to receiving your check, and to continue serving you on a credit basis. [RETURN]

[RETURN]

[RETURN]

Sincerely yours,

[RETURN]

[RETURN]

[RETURN]

John Jones,

President

When Mr. Jones prints the letter, the printer will stop at every occurrence of [OPTION] [INSERT] and will wait for the appropriate information to be typed in at the keyboard.

Here's how it works:

Mr. Jones: P

AtariWriter: PRINT WHOLE FILE, Y/N?

Mr. Jones: Y [RETURN]

AtariWriter: NO. OF COPIES:

Mr. Jones: 15 [RETURN]

AtariWriter: MAKE ENTRY, PRESS [RETURN]

Mr. Jones: WalkAbout Shoes, Inc. [RETURN]

AtariWriter now prints the letter until it recognizes the next [OPTION] [INSERT] command.

AtariWriter: MAKE ENTRY, PRESS RETURN

Mr. Jones: 45-2356E [RETURN]

And finally:

AtariWriter: MAKE ENTRY, PRESS RETURN

Mr. Jones: \$347.89 [RETURN]

The rest of the letter is printed.

Mr. Jones only types the name of the store, the invoice number, and the balance due for each store, instead of typing fifteen separate letters. He also saves the form-letter on diskette to use in the future.

NOTE: Type carefully in response to the MAKE ENTRY, PRESS RETURN prompt, because you won't see the text on the screen. Also, you can enter up to 35 characters when you're inserting text. AtariWriter ignores anything beyond that limit.

## Getting Personal

Sales or promotional letters to your customers can vary by more than the 35 character-limit imposed by [OPTION] [INSERT]. This means you must go beyond simply filling in the blanks. In this example, the basic letter varies not only in its salutation, but in the content of an entire paragraph.

But you can still use the AtariWriter to good advantage by (1) saving the basic letter, (2) saving the revised versions under new filenames, and (3) chain-printing the batch of letters.

The screen below shows a letter from Mr. Jones to one of his customers, Mr. Harry Johnson of SoleMate Shoes. The text to be revised is boxed.

This letter is clearly personal to Mr. Johnson. Mr. Jones has a different sales pitch to make when he writes Arthur Smith, the president of WearWell Shoes in Bangor, Maine; and furthermore, he never met anyone from WearWell at the Footwear Festival.

Suppose Mr. Jones writes the letter shown below and then saves it under SHOESALE.001. He then revises the letter to Mr. Johnson so that it becomes personal to Mr. Smith by deleting the boxed text and replacing it with whatever is appropriate. (His personalized entries have been indicated in bold type.) Mr. Jones then returns to the menu to save the second version of the letter under a new filename:

Mr. Jones: S [RETURN]

AtariWriter: DEVICE: FILENAME

Mr. Jones: D:SHOESALE.002 [RETURN]

Mr. Harry Johnson

SoleMate Shoes

12-45 3rd Avenue, S.E.

Washington, D.C. 10000

July 1, 1984

Dear Mr. Johnson:

We are delighted to have you on our growing list of distributors. Our Zip-Lock Year 'Round Boot (#01-768) has been selling

steadily in various markets. In addition, our motto "You'd love to be in our shoes!" won the Sarasota Advertising Council's prestigious Bell-Ringer Award for Ad Copy for 1984. We are planning to continue our aggressive and creative marketing approach across the east coast.

As a special offer, anticipating the back-to-school season this Fall, Sunshine Shoes is happy to announce a 10% discount on lots of 25 or more pairs of #01-768. This offer expires August 31. Delivery is guaranteed within thirty days of receipt of your order, or the shipping cost is on us.

I enjoyed meeting you at the Footwear Festival last month, and I look forward to providing your stores with our new Soft-Sandal. As you mentioned, the frequently hot Washington weather makes a comfortable sandal highly marketable.

Sincerely yours,

John H. Jones, President  
Sunshine Shoes  
345 Palm Street  
Sarasota, Fla.

[CTRL]E [RETURN]  
[CTRL]V SHOESALE.002 [RETURN]

The formatting commands at the bottom of the letter tell the printer to page eject [CTRL]E and then print the second version of the letter [CTRL]V SHOESALE.002.

Notice these settings in the print-format block:

G3—proportional spacing makes a long letter easier to read, if you're using a dot matrix printer.

D2—double-spacing between paragraphs.

I5—indent 5 space to begin the paragraph for "semi-block" form.

It's not only in business that creating "close cousin" letters is useful. Suppose that you've just returned from vacationing in Hawaii, and you want to write to three friends about your trip. Of course, you could photocopy the letter, but then it's not personal. Without word processing, the only way to add those personal touches is by retyping each letter. You can do a lot better than that with *AtariWriter*.

## Getting Formal

The letter above is in semi-block form because the date is "blocked right" [CTRL]C [CTRL]C July 1, 1984 [RETURN] and because the beginning of each paragraph is indented 5 spaces (I 5). Some businesses prefer the "full" block style, which is considered more formal. In full block form, every line begins at the left margin. There are two ways to accomplish this:

1. Move the cursor to the print-formatting block, delete the 5 following I and type in 0. This way, you can still begin each paragraph with [CTRL]P, which gives you double-spacing between paragraphs; your paragraphs will be indented 0 (zero) spaces. In other words, they won't be indented at all.
2. Do not change the I (Indent) setting, and do not use [CTRL]P at the start of a paragraph. Insert [RETURN] where you want to skip a line between paragraphs.

Here's an example of full block form using method 2:

July 1, 1984  
[RETURN]  
Mr. Harry Johnson [RETURN]  
SoleMate Shoes [RETURN]  
12-45 3rd Avenue, S.E. [RETURN]  
Washington, D.C. [RETURN]  
[RETURN]  
Dear Mr. Johnson [RETURN]  
[RETURN]  
We are delighted to have you on our...etc.

## Cooking Up "Boilerplate"

Another means of avoiding redundant typing involves saving files of "boilerplate," which is the dense, cumbersome verbiage that you find in official documents. (Literally, boilerplate refers to the sheets of 1/2-inch thick iron that were used to construct steam boilers.) Suppose that you're an independent graphic artist, and that you write your own contracts for your clients to sign. Each contract describes a different job, but all the contracts have the same "reuse" clause:

Should the contractor reuse the aforementioned design materials in subsequent publications, promotion, or advertising, Custom Graphic Design shall be paid a sum equal to one-third the original fee. This fee shall be considered payment for reusing the design in five separate publications. The next five reuses shall be paid at the rate of one-fourth the original fee...

If you were drawing up contracts for separate jobs, you would not want to retype this "boilerplate" each time.

You can avoid that task by storing the clause under its own filename, say REUSE.CON, and then "merging text" [OPTION]L where you want to introduce that clause. When you're writing your next contract;

1. Stop when you're ready to insert the boilerplate text. Move the cursor to the line where you want the text to start.

2. Press [OPTION]L to merge a file. When you see the LOAD DEVICE:FILENAME prompt, type REUSE.CON [RETURN]. The REUSE.CON file appears, beginning at the line of the cursor.

NOTE: There are two constraints to keep in mind. The length of the files you merge cannot exceed the limitations of the computer's memory. Second, the file you're merging with the one in memory must be on the diskette in the disk drive. If your "boilerplate" is stored on a separate diskette, insert that diskette into the drive before using [OPTION]L.

The potpourri of examples above won't meet all your real-world writing needs. No other writer can anticipate all the ways that *AtariWriter*'s features can facilitate and improve the documents you write. But mastering even a few of the possible techniques should start you thinking about others that you can devise and adopt. Document your own ideas on paper and keep the list with your *AtariWriter* manual. You can turn your word processor into more than an "intelligent typewriter."

Len Lyons is author of two books on jazz and articles for *Rolling Stone*, *Playboy* and other music magazines.



(continued from page 20)

### Suggested Reading:

**Word Processing News**, Edited by Barbara Elman, 211 E. Olive #210, Burbank, Calif. 95102. This is subtitled "writers' point of view on word processing." Writers, teachers, and anyone working with word processors might certainly like to look at a sample issue.

**Words into Type**, Third Edition, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1974.

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## File Management Databases

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...data turns into information only when someone asks a question about it. Therefore, the real information is in the question, not inside the computer.

Jacques Vallee:  
Network Revolution

**FILE MANAGEMENT SYSTEMS** or database files are basically stores of separate data entries all categorized similarly. (As opposed to straight text files.)

Best suited for home and small home businesses are file management systems. With one you can set up mailing lists, wine lists, categorize your library—the list of possible lists is long. I have friends who operate a trucking business from their office at home and use their computer system to prepare all freight bills and tax records.

There are other database systems as well: relational systems, which have greater data-manipulating ability, appropriate for larger businesses (or your home if you're inclined to get involved more complexly) and network/hierarchical systems, certainly for businesses and which require some program writing on the users part.

But, let's take a look at someone's jazz album library. Suppose Julie is a real jazz aficionado and trades tapes with people all over the country. An entry in her file might look like this:

ALBUM TITLE:	Solitude
REC. CO.:	Verve
YEAR:	N.A.
VOCALS:	Billie Holiday
PIANO:	Oscar Peterson
DRUMS:	Alvin Stoller
GUITAR:	Barney Kessel
BASS:	Ray Brown
TENOR SAX:	Flip Phillips
ALTO SAX:	N.A.
LEAD SONG:	East of the Sun

Julie could tell anyone how many

Billie Holiday albums she has, how many were recorded on Verve, how many featured Oscar Peterson, and so forth.

A typical "home computer" diskette file can hold up to 500 "files." Each file is roughly limited to about 15 categories of usually 25 characters per category.

What to know as you begin shopping for database software:

- What you want to file (obvious, but often forgotten!).
- Approximately how many words or numbers each entry contains to determine how much storage you'll need.
- Some software features to consider:
  - Can you "custom-design" your own file categories, or "data fields" right on the screen?
  - Can you change the setup once you've entered your data? (On many systems this is difficult to do.)
  - Is the manual easy to read and the "scenario"—the steps you go through to use the system—simple to learn?
  - Is the system menu driven? (This means, does it offer you possible selections as you move from step to step?)

Since many systems don't allow changes with ease, it is important to really think out your categories ahead of time. It will be much easier for you in the long run. Spend some time considering what the data is and what are the

many ways you might want and need to use it.

If you're an organized person to begin with, you'll probably find file management to be fun; if you're not, you may just turn over a new leaf!

### Suggested Reading:

Many popular magazines carry file management features—if there's not one in *Personal Computing*, try *Compute!*, *Popular Computing* even *ATARI CONNECTION!* Some of these magazines have columns to which readers contribute programs; I've run across several file management ones (See "Computer Classroom", *ATARI CONNECTION*, Winter 1982/83, Spring 1983.)

For a detailed look at database systems for business try: *Database Management Systems: A Guide to Microcomputer Software* by David Kruglinski, Osborne/McGraw-Hill, Berkeley, Calif. 1983.

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## How to be your own Home Accountant

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**DO YOU ALREADY** keep good household and/or small business records? Can you at the flip of a page say:



- What your food has cost this month?
  - How much you've allotted for entertainment this month?
  - How much you've saved this year?
- If you have a small home business, do you know:
- What percent of this quarter's income is expenses?
  - How much you owe your creditors?
  - What profit you've made this year?

Good bookkeeping software or electronic spread-sheets, such as *VisiCalc* replace accounting sheets with a computer display, pencil with keyboard and cursor, and calculator with a computer.

But, business software doesn't replace your own logical thinking and ability to create a picture of what you need to keep your household or business on sound financial footing. If you've never kept a budget or tried to account for your home or personal finances, you may want to do some reading in that area before sitting down at the computer with an expensive accounting program. That way you won't be overwhelmed by the bookkeeping and the computer simultaneously!

If your main concern is your household, these are some things you'll want to have a handle on:

- Keeping track of where your money's coming from—and how often.
- Determining what your fixed expenses are.
- Estimating your daily expenses (leaving room for "niceties").
- Leaving emergency money available.
- Providing for savings.

Once you start defining what you want to keep track of financially, you can start putting your computer to work for you. You can balance your check-book, manage stock portfolios, budget your meals, vacation time and expenses, and what it will cost to paint your house!

### Suggested Reading:

**Sylvia Porter's New Money Book for the 80's**, Avon, \$9.95. This book, more than any I know, will help you think logically—and optimistically—about your money. Sylvia covers everything from your dental work to career planning. This book inspires one to budget. The book also offers some budget worksheets you can adapt to *VisiCalc*.

**VisiCalc Home and Office Companion**, David M. Castlewitz and Lawrence J. Chisauky with Patricia Kronberg, Osborne/McGraw-Hill, Berkeley, Calif., \$15.99. This book offers "templates" or samples of what the spread sheets will actually look like on the monitor as well as how to list the proper information. You can use them as

is if they meet your needs, or use them as a springboard to creating your own.

**The VisiCalc Book**, Atari Edition, Donald H. Bell, Reston Pub. Co., Reston, Va., \$14.95. This is computer specific about the software program, its powers and capabilities, built-in functions, etc. Goes into far more detail than the two books above, but is not especially geared for households.

## Computer Art

ONE THING I'VE always found intriguing is the variety of media a visual artist can work in and how closely tied the medium is to any statement being expressed. Painters generally love the smell, look, and feel of paint.



If you're an artist you may already be discovering how to transfer graphic skills from one medium to another. Some very beautiful art is being produced on computers. Brilliant colors, intriguing shapes, some that look like an airbrush effect, some like pictures done in oils and some—like nothing you've ever seen before.

At first you may just want to see how computer graphics actually work, what programming is involved, and what the different graphic modes can do. Then if you decide to seriously pursue graphics, you may want to think about some theories and principles that apply to all art—be it on canvas, rice paper, a book jacket, or on a monitor.

Once you begin drawing or painting, you realize any and everything can be subject for your work... the tree outside, the jars on your windowsill.

There are some concepts you might want to keep in mind once you begin sketching and getting your ideas together.

- **Composition**—This is the arrangement of objects, lines, shapes in your art that creates an effect you want. You also use composition techniques to lead a viewer's eye from one part of a picture to another. Further, composition is simply arranging different shapes and colors.

- **Color**—An artist creates a palette which is a selection of colors to work with at any given time. Your Atari com-

puter gives you 256 colors from which to choose. You may want to study color theory: the primary colors, complementary colors, how to make tints of a color (adding white), how to make tones of a color (adding black) to give you a deeper understanding of how to work with your Atari computer colors.

### Graphics

Now, on to your computer! When programming in ATARI BASIC, you have 8 to 12 graphic modes to choose from (most Atari computers now have 12 modes). Why all the different modes? Each mode has a different pixel resolution, a pixel being basically a dot of color. The graphics screen is like a sheet of graph paper. The lower modes have larger squares (pixels), the higher modes, smaller squares. Naturally, the smaller squares give you greater detail.

Also, as you learn more you'll find out why computer art is its own special medium:

- It's new so there is the fun element of something unique—different horizons open up to you.
- Once your art is in the computer it is immediately transmittable—it's available at the moment of creation. Instant publication!
- Your art can be enhanced and changed more readily. You can alter or revise your piece at will. It's not as final as painting on canvas.

### Animation

Animation, as you probably know, is created by quickly displaying a series of pictures, slightly different from each other, to create a sense of motion. Each picture is called a frame.

- **Key frame**—The figure that you want to move is in an extreme or a "key" position of that motion.
- **In-between frames**—The picture does not have as extreme a representation of motion but this frame will determine the smoothness of the animation.

By studying classic animated cartoons, you can begin to figure out what frames were used to create the animation section. An easy way to study animation is to buy a toy film cassette viewer and look at the film strip, frame by frame.

- Notice the attention to detail in the drawings. If a person is walking, probably his whole body is moving up and down, not just one foot moving in front of the other.

- Realize that there is a lot of trial and error involved with computer animation. But, you can see what you do right away. No waiting to get film back!

For computer animation you should know a good version of BASIC. You do



not need to know Assembly language although you can do animation in Assembly. The animation book recommended at the end of this segment only gives examples in BASIC.

- The most basic method of executing animation on a computer is by using PRINT statements to draw the figure on the screen. Then you PRINT over that picture with another one. We then see movement when these figures are PRINTed in rapid order.

I highly recommend the book *Computer Animation Primer*. Step-by-step it takes you through the whole process.

What starts to get exciting is figuring out how to work the art and animation into a program. If that is what you're doing, don't neglect thinking about typography. Do you want to have some type as an integral part of your program?

### Typography

Sometimes type is overlooked as part of the visual image but the choice of typeface, its size and placement are all part of your composition. Book design is a subtle and beautiful art, as is any art form that uses type, e.g., magazines, ads. Start looking at printed matter with your eye especially attuned to the typography. You'll notice:

- *Lightface*—a lighter version of the regular type
- *Boldface*—a darker version
- *Condensed type*—Narrower letters that fit closer together
- *Extended type*—Wider letters

There is software available that allows you to draw and paint without plotting. Atari has just come out with a Touch Tablet with *AtariArtist* software. As you move a stylus on the tablet, you "draw" on the screen. A button on the stylus lets you control with your fingertip what shapes or lines you want, or what you want to fill in with color. Different menus give you choices of colors and patterns. Software like this is sure to be a hit with your children.

### Suggested Reading:

**Compute!'s First Book of Atari Graphics**, published by Compute Books. A very clear, easy-to-read guide.

**Atari Sound and Graphics, A Self-Teaching Guide**, Herb Moore, Judy Lower, Bob Albrecht, John Wiley & Sons, Inc.

**Preston Blair's Animation**, Foster Books. Teaches fundamentals of animation.

**Computer Animation Primer**, by David Fox and Mitchell Waite, a Byte Book, McGraw-Hill, Berkeley, Calif.

**Designing with Type, A Basic Course in Typography**, James Craig, Watson-Guptill.

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## Computer Sound

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**A**T THIS POINT in time, sound may be one of the most underdeveloped aspects of computer use. What a chance for you to get in on the ground floor!

No doubt you have a favorite type of music, be it jazz, country, or classical. What intrigues you about computer music? Trying to replicate your favorite form? Trying to create something entirely new? Wanting to add some zip to a learning program or game you're working on?

You may want to begin your journey into sound by listening to some sophisticated "state of the art" computer music. *Kraftwerk* is a progressive rock and roll band from Dusseldorf, Germany. Instead of trying to imitate another type of sound, the group relies on *sounding like computer's*.

Once you get involved with your compositions, you can learn how to interface your computer music with your stereo and how to have the programmed music play through an electronic keyboard.

You don't really have to know how to read or write music to use the sound mode on your Atari computer. But, if you want to do anything sophisticated you'll certainly want to learn how to read scales.

If you haven't attempted sound yet, here are the very basics of accessing the sound mode. Using ATARI BASIC, you simply type in SOUND and four numbers. Each number is called a parameter which is one of the elements that will affect the sound.

The first parameter is VOICE. Your Atari computer has four voices—it's a veritable barbershop quartet. The voice numbers are 0, 1, 2, 3. Voice is the first number you type in after SOUND.

The second parameter is NOTE or PITCH. With ATARI BASIC you can play 256 notes from 0 through 255. The highest notes have the lowest numbers, the lowest notes have the highest numbers.

The third parameter is TONE or DISTORTION. Tone is indicated by an even number from 0 through 14.

The fourth parameter is LOUDNESS or VOLUME. You have a choice or sixteen numbers from 0 through 15. 0 makes no sound and 15 is the loudest.

Once you start experimenting you'll be amazed at the variety of sounds you can create. Remember, though, that sound and music are not the same things. You may have to do a lot of trying, trials and errors, "fooling around", before you make music. But this is the

joy of it—and making changes, insertion, and deletions, is as easy in this mode as any other on the computer.

### Suggested Reading:

The *Atari Sound and Graphics* book recommended in the "Computer Art" section.

"Dr. Wacko" on page 47 offers an excellent, step-by-step tutorial on Computer Sound.

### Suggested Listening:

These artists have developed computer-generated sound. Specific samples of their works are listed, but they have many other albums available.

**Kraftwerk, "Autobahn,"** 1974 edition on Virgo Records, 1977 edition on Mercury Records

**Karlheinz Stockhausen, "Electronic Music,"** Deutsche Grammophon (Germany)

**John Cage, "Harpicord,"** Contemporary Composers

**Walter/Wendy Carlos, "Switched on Bach,"** or "More Switched on Bach," Columbia Records

**Throbbing Gristle, "Journey Through a Body,"** or "Mission is terminated," Industrial Records (England)

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## Games

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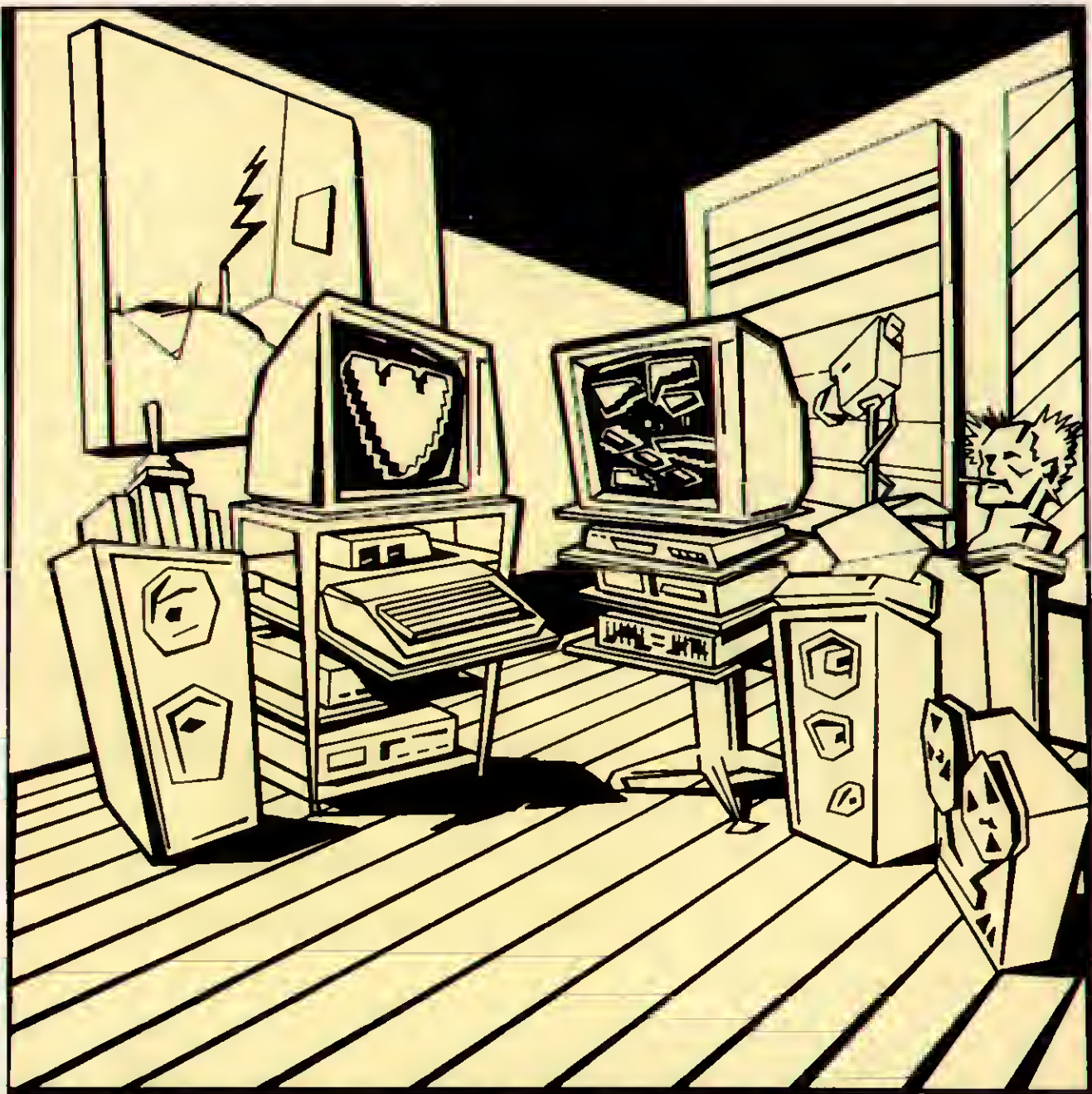
**I**T WOULD BE great if we could always keep the aspect of play present in our lives—it fosters our creativity and gives us perspective on all those more serious things we must deal with. Children learn about the world through game playing, role playing, play acting. From their play they learn competition and perhaps more importantly, cooperation. Well, as adults we can not only encourage our children in this creative play, we can join in the fun!

While many arcade games may seem to be "how to outwit the programmer," games designed by you may have a totally different perspective. You may want to concentrate on problem-solving, pretending, acting. Imagination is the key to play and this is a great place to let that part of you go.

So, where do you begin? Dave Menconi, a game programmer at Atari's Coin-Op Division, gave me some pointers.

- Have an idea of what you'd like the game to be about.

Games are like stories and adventures. Keep the elements of storytelling in mind as you begin conjuring up your own ideas. Read some adventure comics



or some good children's adventure books. These will help get you in the right frame of mind. "Game design" is certainly an activity in which you can involve your children. Each one can contribute to a particular part of the action.

- You'll have to know some programming, either BASIC or Logo. Logo, according to Menconi, allows you a lot of play. Due to Logo's properties you can take off on your own and develop a game practically without trying. You may surprise yourself more than anyone!

A brief mention here: Many of the arcade games are written in Assembly language. Assembly language is quite different from BASIC, Logo, or PILOT. It directly addresses a computer's binary notations. Assembly is not a language for beginners.

- Think of games apart from the

"shoot 'em dead" variety. *That's* where you can use some original thinking! The new Atari Coin-Op *Crystal Castle* game has no violence.

- Don't wait until you've studied everything "perfectly." The point of all this is to have fun, to discover, to play.

Despite the proliferation of arcade-style games, many game designers think we have only scratched the surface of interactive computer game design.

Now's the best time to begin experimenting with new ideas and the advanced computer technology available to home computer users. You'll not only learn, you'll have fun. Happy gaming!

#### Suggested Reading:

**Dr. C. Wacko's Miracle Guide to Designing and Programming Your Own Atari Computer Arcade Games**, David Heller, Addison-Wesley, Reading,

Mass., \$12.95.

Watch for the release in late spring of Dave Thornberg's **Computer Graphics and Animation: A Guide to Logo Programming**, Addison-Wesley, Reading, Mass.

**Space Knights**, David Heller, Reston Pub. Co., Reston, Va., 1983.

- Read classic folklore, fairy tales, Grimm Brothers, Hans Christian Anderson.

- Study the plots of science fiction, sword and sorcery, and fantasy novels.

- Study the characters and dialogues in comic books and comic strips—both new and collections of the great classics.

Anita Malnig is a consulting editor for *Digit Magazine* and a former book editor for the *Children's Television Workshop*.





Computer enthusiast Alan Alda uses the ATARI 800XL Computer System. Alda reports: "It's going all the time!"

**Introducing the Atari<sup>®</sup>  
XL Home Computers:  
We made them  
smart enough to know  
you're only human.**



**T**he new ATARI XL Home Computers prove that you can blend state-of-the-art technology with good old fashioned friendliness. What's a friendly computer? For one thing, it's a computer that speaks your language. Both the new ATARI 600XL™ and the new ATARI 800XL™ Computers come with a built-in BASIC language that uses the same simple English you use to converse with the rest of the world.

**Press the HELP button, not the panic button.**

Every ATARI XL Computer comes with a HELP key. Something you won't find on any other home computer. New programs are becoming available that let you use this key for helpful "prompts" when you're unsure of what to do next. Press another special key and your ATARI XL automatically performs a self-diagnostic check—a feature that can save you a needless trip to one of our more than 1,000 ATARI Service™ Centers.

**The ATARI 600XL: It Gets Smarter As You Do.**

With 16K of memory, the inexpensive ATARI 600XL can

handle over a thousand programs: including education, home management, word processing and personal development. Like all ATARI Home Computers, it gives you 256 colors, four sound channels and Atari's unsurpassed graphics. But unlike a lot of other computers, the ATARI 600XL is ready to grow when you're ready to grow. Every ATARI XL Computer is fully compatible with every ATARI peripheral ("peripherals" are added on to expand what your computer can do).

ATARI peripherals include: a low-cost, letter-perfect printer for word processing. A telephone modem that lets you use your telephone to connect your computer to other computers thousands of miles away. A disk drive and a cassette recorder to store data. And Trak—Balls™ and joysticks to use with Atari's unequalled lineup of great arcade hits. An ATARI 600 XL Computer can be turned into a very brainy 64K computer at a very affordable price.

**The ATARI 800XL: Power Enough For Over 2,000 Programs:**

With 64K of built-in memory

(as much as the more expensive Apple and IBM computers), the ATARI 800XL can take on any of over 2,000 software programs. That's five times as many as a Commodore 64.

There's VisiCalc®<sup>1</sup> for electronic spreadsheets—faster than the fastest accountant. The Home Filing Manager™ to help keep track of everything from medical records to phonograph records. Family Finances to keep up with your cash flow. Educational programs like "Juggles' Rainbow"<sup>2</sup> that helps preschoolers develop skills necessary for recognizing the alphabet. Even "An Invitation To Programming,"™ for learning how to program.

**When You've Got Our Computer, You've Got Our Number.**

If you ever find yourself stuck, or have any questions at all, just give us a call. 800-538-8543. (In California, 800-672-1404.) Feel free to talk it over. Because if there's anything friendlier than an ATARI Home Computer, it's the humans who make them so friendly.

**You'll do more with  
Atari Home Computers.**

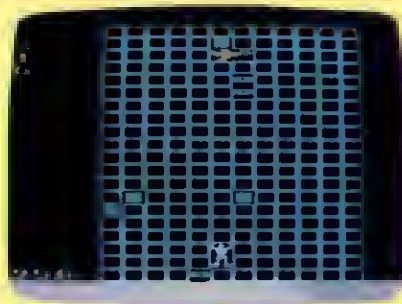


<sup>1</sup>VisiCalc is a registered trademark of VisiCorp  
<sup>2</sup>Trademark of The Learning Company





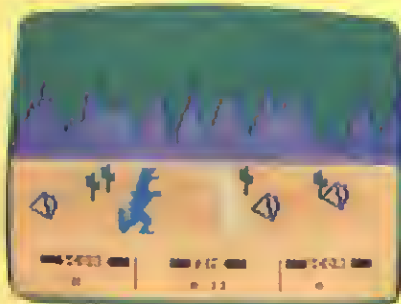
Maniac!



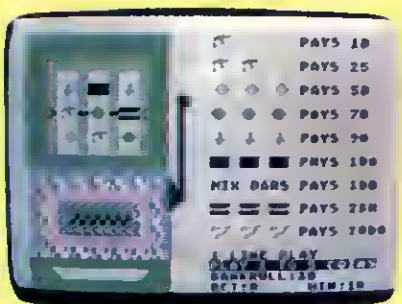
Stuntman



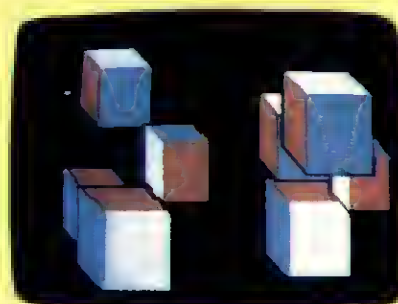
Fill 'Er Up



Dino Battle

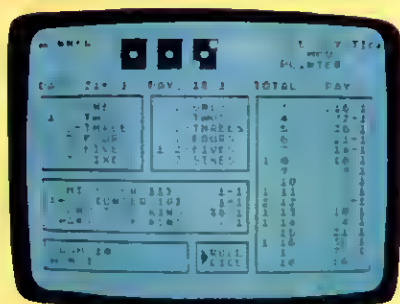


Color Slot Machine

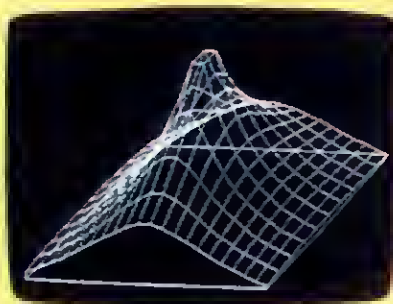


Cubes

Where can you get all of these programs  
(and dozens more!) for only \$14.95?



Triple Threat Dice



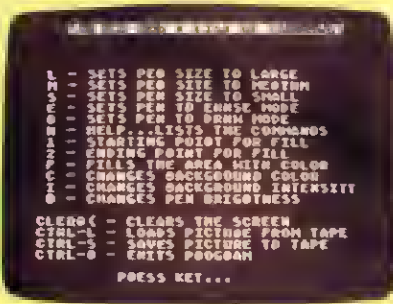
3-D Graphs



Sphere Demo



Leprechaun King



Sketch Pad



Harvey Wallbanger

**ON  
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# Building a Computer Laboratory

## Students and Teachers Construct Their Own Computer Workstations

**T**HE FIRST QUESTION asked by many school systems wishing to provide students with a computer education is, "How much will it cost?" Boards of Education, administrators, and teachers know that with the growing pressure to install computer equipment comes the responsibility to make the most of taxpayer dollars. With this in mind, Mountain Lakes Public Schools, in Mountain Lakes, New Jersey, formed a Computer Advisory Committee to study computer hardware, software and curricula. As the computer literacy teacher at Mountain Lakes High School, I teamed up with school principal Richard Zanella to see how others had approached the problem.

Most computers in the schools we visited were limited in the range of

graphics and sound generation, or were prohibitively expensive. Educational software also left a lot to be desired. Teachers and students complained about the computer room layouts, particularly the mass of electrical and connecting cables strung on, over, and around the work areas. And, with funds in short supply, it was rare to find a computer equipped with its own disk drive and printer.

With all this in mind, we looked into the Atari 800 computer with 48K bytes of memory. I was impressed with its ability to work in several languages, since I wanted to use Logo with my first students. The price, the strength of the available peripherals and quality and quantity of software left no doubt that Atari was the way to go.

Meanwhile, we found a way for an entire class to make use of just a few peripherals. Wolsten's Computer Devices of East Orange, New Jersey, had just developed a computer network station for use with Atari computers systems. Known as the Network 216/Monitor 16, it allows up to 16 Atari computers to access centrally located disk drives and printers. The network scans each of the 16 computer locations about every two seconds, looking for an Input/Output request. When a student wants to access a disk drive, for example, the network locks onto that computer and switches it to the drive. When the computer has the requested material, the network disconnects and continues scanning, answering all requests in sequence.

To tame the cable and wiring "snakes," I designed workstation furniture with a central trough through which we routed the power and control cables. Mechanical drawing classes drafted the plans, and industrial arts teacher Bill Mulligan built and installed the furniture over the summer. The end result is a Computer Learning Center (CLC) that's functional, attractive and cost-effective.

While students are busy solving problems with the new Atari Logo program, the teacher can use the monitor feature of the Network 216 to see what's happening on any workstation screen. It's possible for the teacher to watch progress, help debug a problem, and address a student over the TV speaker. One of the really exciting features of the system is its ability to reproduce any of the 16 screen displays on the master monitor, so everyone can see a particularly clever or beautiful effect a student has developed from the assignment. This provides instant examples for the class, and motivates others to "top the monitor" by developing even better programs. Students have quick and easy access to all the equipment they need, and can concentrate on the creative aspect of computing. The well-organized room and networking system allow students to work in an environment close to what they might find in the real world, and all at a reasonable cost per student.

This laboratory has demonstrated that computers need not be an intrusion into the teacher's domain. Indeed, they can facilitate the sharing of knowledge. And that's what teaching is really all about. —Frank Pazel



**Station identification:** Students in the Computer Learning Center can share access to centrally located disk drives and printers while their teacher monitors the network to help solve class problems.

Frank Pazel is Coordinator of Computer Services for Mountain Lakes Public Schools and editor of the Jersey Atari Computer Group Newsletter.

# Shared Typing

## Four Hands Are Better Than Two

by William O'Connell

**Y**OU AND AN ATARI computer-owning friend have come upon a fabulous new game program, "Killer Grubs from Ganymede," listed in a computer magazine. It looks great—graphics, color, sound, and it's in BASIC. There is one catch, however—the listing has hundreds of lines of code to be typed before the game will ever appear on a TV screen.

Each of you has a cassette program recorder. But, who will do the hours of typing, and who will be the lucky parasite? There's a simple way to share the task, but it's buried in the ATARI BASIC manual, and easily overlooked.

First, split up the long game program in an equitable manner. Remember, long data statements are harder to type than are simple GOTO lines. Be sure each of you is using different line numbers in the program portions you choose.

Now each of you goes home to type your agreed-upon allotments. At the conclusion of your typing session, do not CSAVE the program, but instead use the following procedure:

(1) With all printers off-line (or unpowered), enter a LPRINT command. You will get an error message which may be disregarded.

(2) Now, save the program (a few separate times to make sure!) with this command: LIST "C:". Have your friend save his portion on a separate tape.

(3) The next time you and your friend get together, load one portion of the program into the computer with the command: ENTER "C:"

(4) When the loading is completed, switch tapes, and use ENTER "C:" to load the second half of the program onto the end of the first half.

The machine will now merge the two separate entries into one program. Run it, and debug it as necessary.

Now use the LPRINT, followed by CSAVE, sequence which you would ordinarily use to save programs. Notice that although the program listing is now twice as long, the saving-time and tape-count readings are not. This is because a CSAVE command "tokenizes," or condenses the program, fitting more information in less space than a "C:" command.

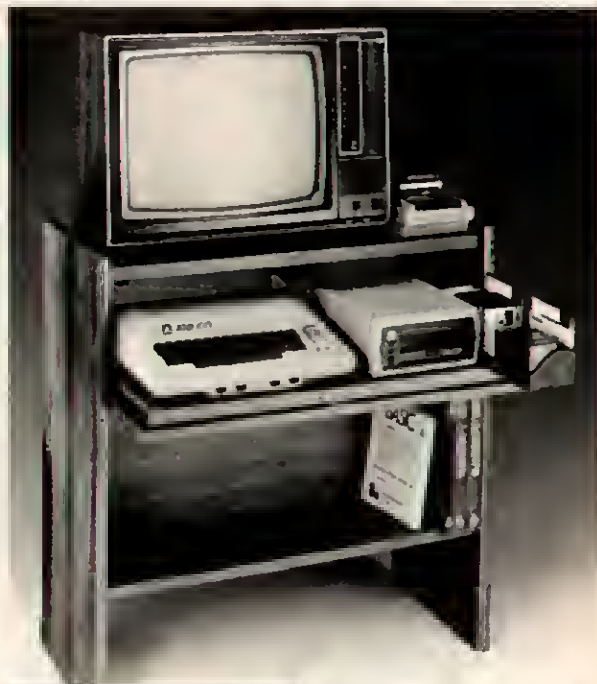
Okay, now that you know the theory, choose a short program listing and test it. Type the first five lines and save them to tape using the LIST "C:" procedure above.

Next, enter NEW to clear the first portion out of the machine, and type in the rest of the program. Save to another tape with the command LIST "C:". Rewind the tape, and clear the machine with the instruction NEW. Now, ENTER "C:" and when it is loaded, LIST it. Then ENTER "C:". Finally, LIST the entire program, and then RUN it to verify that both parts have indeed merged to one long program.

Don't be daunted by impossibly long program listings—it's amazing what you can do with a little teamwork.

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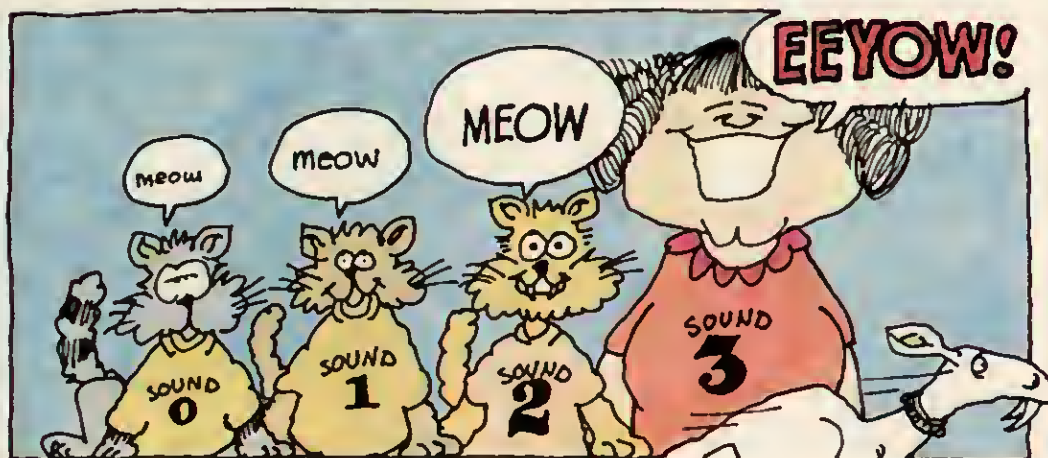
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# Dr. C. WACKO ASTOUNDS YOU <sup>with</sup> SOUND

by David L. Heller



**W**HEN I FIRST BEGAN my career as a wacko-el-supreino, I spent most of my time programming games on really BIG computers: mainframes, super-mainframes and the El Biggo Whopper-Doo Mark IV at C. W.I. (Computer Wacko Institute).

I was programming those biggos in every language known to Wackodom: COBAL, FORTRAN, LISP, even SANSRIPT! But, none of those gigantic computers could sing, make weird rumbling sounds, meow like a cat or explode . . . BAROOOMM! And what, after all, is an arcade game without sound?

But, alas, my lovable and cute Atari computer saved me. I now spend hours making beautiful, weird and horrid sounds on my Atari computer. I love it. It relaxes me. It's therapeutic. My life, and my games, are now full of SOUND!

Your Atari computer can sing, or meow, in as many as four voices. You can use each voice solo, or you can be creative and combine a few or all four voices to achieve remarkable sound effects, and some beautiful music.

A typical SOUND statement looks like this:

**SOUND 0,100,10,15**

Type this in and press RETURN. When you've heard enough, type:

**END [RETURN]**

Here's what each number in a SOUND statement controls:

**VOICE: SOUND 0**

Select the voice you'd like to use by assigning a value to the first number following the SOUND command. SOUND 0, SOUND 1, SOUND 2, and SOUND 3 are all available.

**PITCH: SOUND 0, 100**

Select each voice's pitch by setting the second number to a value between 0 and 255. 100 is the pitch I've selected in my example.

**DISTORTION: SOUND 0,100, 10**

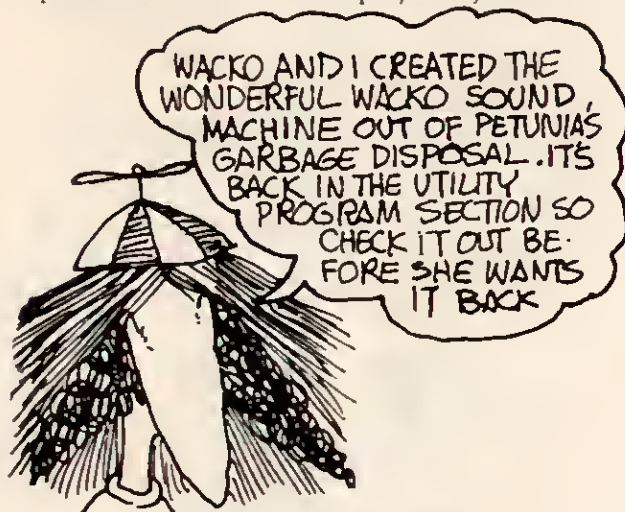
The third number in a SOUND statement varies distortion from pure tones to gobbledygook. "10" and "14" are pure tones. Other even-numbered values (0,2,4,6,8, and 12) add different amounts of noise and distortion to your tone. Remember, the number controlling the distortion must always be an even value between 0 and 14.

**VOLUME: SOUND 0,100,10, 15**

Vary the loudness of each voice by setting the fourth number to a value between 1 and 15. "15" is the LOUDEST. "1" is just a whisper.

Before I show you how to program BARROOMS,

BONGS and ZAPS, type in and play around with this short program. It will help you become acquainted with the basic concepts you've just learned.



## BASIC SOUND

```
1 REM ** BASIC SOUND **
10 ?? "ENTER Pitch, Distortion
and Loudness. Press RETURN after
each entry."
20 TRAP 70:INPUT P,O,L
30 SOUND 0,P,O,L
40 IF PEEK(53279)<>6 THEN GOTO 40
50 SOUND 0,0,0,0
60 ?? "ZOUNOEO GREAT!":GOTO 10
70 ? "YOU MADE A BOO-BOO. TRY
AGAIN!":GOTO 10
```

A question mark appears on your screen when you RUN this glamorous program. First enter the Pitch, then the Distortion, and finally the Loudness. Press RETURN after each entry. Press START when you've heard enough.

I always enjoy playing with combinations of PITCH and DISTORTION. Captain Action showed me these interesting combinations. Try them, and then create some of your own astounding sounds:

Car: PITCH 100, DISTORTION 4  
 Generator: PITCH 100, DISTORTION 6  
 Rocket: PITCH 100, DISTORTION 8  
 Airplane: PITCH 250, DISTORTION 12

### A Cacophony of Multi-vociferous Sounds

Want to make a cacophony of multi-vociferous sounds? Just replace line 30 and 50 in the Basic Sound program with:

```
30 SOUND 0,P+4,D,L:SOUND 1,P+8,D,L:SOUND
2,P+12,D,L:SOUND 3,P+16,D,L
50 FOR OFF=0 TO 3:SOUND OFF,0,0,0:NEXT
OFF
```

Line 50 is a neat routine that turns off all four voices.

See what happens when you use a whole bunch of voices? You get a whole bunch of noise! Change the values that are added to Pitch in each SOUND statement. Wilder noise!

### Now That You Understand SOUND

Now that you understand how the SOUND statement works, it's time to show you how to use

SOUND in your arcade games. But, before I do, here are a couple of sound treats for you to enjoy.

## JUNIOR'S BIRTHDAY PRESENT

```
10 REM JUNIOR'S CHOO-CHOO TRAIN
20 GRAPHICS 17:POKE
712,148:POSITION 1,10:PRINT
#6;"JUNIOR'S CHOO-CHOO"
30 FOR X=15 TO 0 STEP -1:P:SOUND
1,0,0,X
40 R=INT(RNO(0)*300)+1
50 IF R=30 THEN SOUND
3,36,10,10:SOUND 2,48,10,10:GOSUB
90:SOUND 3,0,0,0:SOUND 2,0,0,0
60 NEXT X:P=P+0.03
70 IF P>=5 THEN P=5
80 GOTO 30
90 POKE 77,0:POSITION B,12:PRINT
#6;"toot":FOR A=1 TO 400:NEXT
A:POSITION B,12:PRINT #6;"
":RETURN
```

## CAPTAIN ACTION'S BLAST

```
1 REM **CAPTAIN ACTION**
10 GRAPHICS 17
20 FOR X=10 TO 100:SOUND
0,X,10,10:SOUND 1,X-2,10,B:SOUND
2,X+2,10,12:NEXT X
30 SOUND 1,0,0,0:SOUND 2,0,0,0
40 POSITION 4,11:PRINT
#6;"BAROOOOMMM!"
50 FOR DECAP=15 TO 0 STEP
-0.5:SOUND 0,100,8,DECAP:FOR B=1
TO 20:POKE 712,B:NEXT B:NEXT DECAP
60 GRAPHICS 1+32:POKE 712,148
70 POKE 752,1:PRINT "Captain
Action designed this one!"
80 PRINT :PRINT " Press START to
blow up again!"
90 IF PEEK(53279)<>6 THEN GOTO 90
100 GOTO 10
```

SOUND Advice from Dr. C. Wacko:  
 "Put SOUND in Your Arcade Games!"

Hey-Yoh! Wacko's back! And, I'm going to show you how to add wild and crazy sound to your arcade games!





In the last issue of the ATARI CONNECTION I presented my famous Bong program. In Bong, when the ball hits a wall you hear—you guessed it—Bong!

If you have the Fall '83 issue handy, turn to the Bong listing on page 39 and follow along. If you don't, rush out and beg, borrow or buy one! If you can't find a copy, follow along anyway. The concept I'm about to explain applies to all BASIC game programs.

## SOUND and the IF/THEN Statement

The Bong program listing shows a great example of the IF/THEN statement's use in arcade game sound. It works like this:

**IF** something happens in your game—a ball hits a wall or a rocket ship takes off, or a monster burps

**THEN** the SOUND statement is activated.

In the Bong program (line 140), if the ball hits one of the walls **THEN** the program jumps to line 190 and SOUND 0,100,10,10 is played. After the color of the walls is changed in line 230, the sound is turned off in line 240, and the program returns back to line 110.

Now that you're an expert SOUND maker, fool around with the SOUND statements in the Bong program. Change them to your heart's content. Captain Action was able to make the computer cough when the ball hit a wall, but you can do better than that! Try adding more than one voice to your game programs to really make your program come alive.

## Decay of the PING

A ping sound effect is often used in games to accompany a screen change. For example, in simulating a star cruiser's control console, a ping might sound every time your player changes from battle stations to standby status.

A pinging effect is achieved by decaying the sound. That is, playing the sound a number of times and reducing the volume each play.

Here's how to produce a decaying sound. You'll find many uses for this effect in both games and music.

## PING!

```
10 FOR DECAY=15 TO 0 STEP -.8: SOUND
0,60,10,DECAY:NEXT DECAY
```

**NOTE:** A decay decreases a note's volume while sustaining its pitch.

Vary the rate of volume decrease by changing the negative value that follows the word "STEP" in the Ping! program. The smaller the negative number, like -.05, the longer the decay.

Play around a little with this concept. You should be able to get PING! to sound like a note played on a piano!



## On the Attack

A decay's opposite number is called an attack. An attack increases a note's volume while sustaining its pitch. Just change the beginning of the Ping! program to read: **FOR DECAY =0 to 15 STEP .8.**

Although a decay can be used very effectively for music and some special sound effects, it isn't practical to use a decay in programs like Bong. If you inserted Ping! in place of the SOUND statement in line 190, the ball will "freeze" against the wall until the FOR/NEXT loop completes its cycle.

## Let's Go to a PING Subroutine

In many games the same sound is called for throughout the program. In one of my games the player presses the START key to flip through a variety of screens and maps. A Ping sound effect accompanies each screen change. You should use a subroutine to create the ping.

Type in and RUN this little gem to get the idea:

## Little Gem

```
1 REM ** LITTLE GEM **
10 IF PEEK(53279)=6 THEN GOSUB 100
20 GOTO 10
30 . **Here comes the PING
Subroutine**
```



```

100 FOR DECAY=15 TO 0
STEP-.8:SOUND 0,60,10,DECAY:NEXT
DECAY
200 SOUND 0,0,0,0:RETURN

```

Every time you press the START key, the Little Gem program branches to the subroutine in line 100. A Ping sounds, then in line 200 the sound is turned off and the program returns to line 10.

If you are using the same SOUND statement throughout your program, it's easier to GOSUB to a SOUND subroutine. You'll save yourself the effort and time of typing in the same SOUND statements many times, and your program will be more efficient and use less memory.

## Changing SOUND with DATA

Complex and changing sounds can be made by reading values into the SOUND statement(s). In my book I show you how to write some pretty fancy music using this DATA method. But, in this condensed article I only have space to show you a gruesome example.

I've named this short program "MASHED MONSTER." Listen, and you'll understand why.

### MASHED MONSTER

```

1 REM ** MASHED MONSTER **
10 FOR X=0 TO 3:READ P,0
20 SOUND 0,P,0,12
30 FOR PAUSE=1 TO 200:NEXT PAUSE
40 NEXT X:RESTORE:GOTO 10
50 . **The DATA is in pairs:
(PITCH,DISTORTION)**
60 DATA 60,2,85,10,150,6,100,8

```



Even though Snidely's wild about my Mashed Monster program, most of the people who play your arcade games will have a more refined musical sense. (No offense to your sense intended, Snidely.) They deserve to hear the real McCoy. Music with a beat. Music they can relate to. Music that sounds like Music!

## A Bonus Program!

You'll have to pick up a copy of Dr. C. Wacko's *Miracle Guide* to learn and enjoy my musical recipes. But, don't despair. Here's a bonus program to help you create sounds that are guaranteed to wake up your neighbors.

### Wacko's Sound Machine

After you RUN the Sound Machine, a list of options will appear on your screen. Just type in a num-

ber, press RETURN and listen to all the weird sounds.

The Sound Machine program lets you place any of its sound effects into your program. For example, lines 9000 through 9090 (Star Raiders) can be used as a subroutine in a space game of your own design.

## Creating Your Own Sounds

Enter number 13 and press RETURN and the Sound Machine flips to Sound Dabbler MK.I—its "creative mode". In this mode you'll be able to astound your parakeets with strange bird-like chirps, or frighten your neighbors with wild screeches. Anything is possible!

If you want to mix two voices you'll need two joysticks—one plugged into port 1 and the other in port 2.

- To change PITCH: Move joystick up or down.
- To change DISTORTION: Move joystick left or right.
- To vary the VOLUME: Press the red trigger button.
- Press OPTION to reset voice 0.
- Press SELECT to reset voice 1.
- Press START to exit the Sound Dabbler.

## SOUND MACHINE

```

10 REM SOUND MACHINE
20 REM CERTAIN ARRANGEMENTS OF
SOUND CAN BE MADE TO GENERATE
INTERESTING AND EVEN EXCITING
PATTERNS
30 REM USING PURE TONES; WE DEFINE
A SOUND AS ATTACKING/STABLE OR
DECAYING
40 REM VARIATIONS OF ATTACK AND
DECAY PLUS A SMIDGEN OF STABLE
SOUND MAKE
50 REM GOOD GAME EFFECTS
60 REM DEFINE ATTACK/STABLE AND
DECAY BOTH IN TERMS OF PITCH AND
VOLUME
70 DIM U$(5)
80 U$=CHR$(156)
100 GRAPHICS 0:POKE 710,195:
CHR$(125);:POKE 712,68:POKE
752,1:COLOR 32:PLOT 2,0:POKE
709,15
110 POSITION 18,0:
"THE":POSITION 15,1:
"WONDERFUL":POSITION 17,2:
"SOUND";
120 POSITION 16,3: "MACHINE";
130 POSITION 2,7: "1) VOLUME
ATTACK": "2) VOLUME DECAY": "3)
TONE DECAY": "4) TONE ATTACK"
140 ? "5) VOLUME AND TONE
ATTACK": "6) VOLUME AND TONE
DECAY": "7) VOLUME ATTACK, TONE
DECAY"
150 ? "8) VOLUME DECAY, TONE
ATTACK": "9) STAR RAIDERS":
"10) SIREN": "11) WEIRO ZAP
SOUND"
160 ? "12) POWER GENERATORS":
"13) SOUND DABBLER MK.I"
170 TRAP 200:POSITION 0,22:
U$;U$;CHR$(127);CHR$(127);"OPTION"
:INPUT A:IF A<1 OR A>14 OR
A<>INT(A) THEN 170
180 ON A GOSUB
1000,2000,3000,4000,5000,6000,7000
,8000,8999,9999,10999,11999,20000
190 GOTO 100

```



```

200 ? CHR$(253):GOTO 170
1000 REM VOLUME ATTACK
1010 FOR A=0 TO 15
1020 SOUND 0,50,10,A
1030 FOR B=0 TO 15:NEXT B
1040 NEXT A
1050 SOUND 0,0,0,0
1060 RETURN
2000 REM VOLUME DECAY
2010 FOR A=0 TO 15
2020 SOUND 0,50,10,15-A
2025 FOR B=0 TO 15:NEXT B
2030 NEXT A
2040 SOUND 0,0,0,0
2050 RETURN
3000 REM PITCH DECAY
3010 FOR A=1 TO 255 STEP 5
3020 SOUND 0,A,10,8
3025 FOR B=1 TO 15:NEXT B
3030 NEXT A
3040 SOUND 0,0,0,0
3050 RETURN
4000 REM PITCH ATTACK
4010 FOR A=1 TO 255 STEP 5
4020 SOUND 0,255-A,10,8
4025 FOR B=1 TO 15:NEXT B
4030 NEXT A
4040 SOUND 0,0,0,0
4050 RETURN
5000 REM ATTACK VOLUME AND PITCH
5010 FOR A=1 TO 50
5020 FOR B=1 TO 15
5030 SOUND 0,50-A,10,B
5040 NEXT B
5050 NEXT A
5060 SOUND 0,0,0,0
5070 RETURN
6000 REM DECAY VOLUME AND PITCH
6010 FOR A=1 TO 50
6020 FOR B=0 TO 15
6030 SOUND 0,A,10,15-B
6040 NEXT B
6050 NEXT A
6060 SOUND 0,0,0,0
6070 RETURN
7000 REM ATTACK VOLUME, DECAY PITCH
7010 FOR A=1 TO 50
7020 FOR B=0 TO 15
7030 SOUND 0,50+A,10,8
7040 NEXT B
7050 NEXT A
7055 SOUND 0,0,0,0
7060 RETURN
8000 REM DECAY VOLUME, ATTACK PITCH
8010 FOR A=1 TO 50
8020 FOR B=0 TO 15
8030 SOUND 0,50-A,10,15-B
8040 NEXT B:NEXT A
8050 SOUND 0,0,0,0
8060 RETURN
8999 ? CHR$(125):POKE 710,99:LIST
9000,9090
9000 REM STAR RAIDERS
9010 FOR A=1 TO 10
9030 SOUND 0,50,10,8
9040 FOR B=1 TO 50:NEXT B
9050 SOUND 0,100,10,8
9060 FOR B=1 TO 50:NEXT B
9070 NEXT A
9080 SOUND 0,0,0,0
9090 RETURN
9999 ? CHR$(125):POKE 710,99:LIST
10000,10070
10000 REM SIREN
10010 A=1:B=1
10015 FOR C=1 TO 240
10020 B=B+A
10030 IF ABS(B)>15 THEN A=-A
10040 SOUND 0,45+B,10,8

```

```

10050 NEXT C
10060 SOUND 0,0,0,0
10070 RETURN
10999 ? CHR$(125):POKE 710,99:LIST
11000,11090
11000 REM WEIRO ZAP SOUND
11010 FOR A=1 TO 20
11020 FOR B=1 TO 5
11030 FOR C=1 TO 3
11040 SOUND 0,B*10+C*2,10,B*C
11050 NEXT C
11060 NEXT B
11070 NEXT A
11080 SOUND 0,0,0,0
11090 RETURN
11999 ? CHR$(125):POKE 710,99:LIST
12000,12070
12000 REM GENERATORS
12010 FOR A=1 TO 500
12020 SOUND 0,70,12,8
12030 SOUND 1,71,12,8
12040 NEXT A
12050 SOUND 0,0,0,0
12060 SOUND 1,0,0,0
12070 RETURN
20000 REM DO YOUR OWN SOUND
20010 A1=0:A2=0
20020 B1=0:B2=0
20030 C1=0:C2=0
20040 GRAPHICS 0:POKE 752,1:COLOR
32:PLOT 2,0:POKE 710,132:POKE
712,108:POKE 709,15
20050 POSITION 4,20: ? "OPTION:ZERO
VC 0 SELECT:ZERO VC 1";:POSITION
14,22: ? "START=EXIT"
20060 POSITION 1,15: ? "PATTERN:
Voice,Pitch,Distortion,Volume"
20070 POSITION 1,17: ?
"OIRECTION:N/A,UP/DOWN,LEFT/RIGHT,
BUTTON"
20080 POSITION 10,3: ? "JOYSTICK
0";:POSITION 10,8: ? "JOYSTICK 1";
20090 SOUND 0,A1,B1,C1:SOUND
1,A2,B2,C2
20100 POSITION 10,5:PRINT "VOICE
0: 0,";A1;",";B1;",";C1;" "
20110 POSITION 10,10:PRINT "VOICE
1: 1,";A2;",";B2;",";C2;" "
20120 A=STICK(0):B=STICK(1):
C=STRIG(0):D=STRIG(1)
20130 A1=A1+(A=13)-(A=14):A2=A2+
(B=13)-(B=14)
20140 B1=B1+2*(A=11)-2*(A=7):
B2=B2+2*(B=11)-2*(B=7)
20150 C1=C1+(C=0):C2=C2+(D=0)
20160 IF A1>255 THEN A1=0
20170 IF A1<0 THEN A1=255
20180 IF A2>255 THEN A2=0
20190 IF A2<0 THEN A2=255
20200 IF B1>14 THEN B1=0
20210 IF B2>14 THEN B2=0
20220 IF B1<0 THEN B1=14
20240 IF B2<0 THEN B2=14
20250 IF C1>15 THEN C1=0
20260 IF C2>15 THEN C2=0
20270 A=PEEK(53279)
20280 IF A=3 THEN A1=0:B1=0:C1=0
20290 IF A=5 THEN A2=0:B2=0:C2=0
20300 IF A<>6 THEN 20090
20310 SOUND 0,0,0,0:SOUND 1,0,0,0
20320 RETURN

```

Dave Heller is the Technical Editor of ATARI CONNECTION magazine and the author of two other books for the Atari Home Computer: Space Knights, Reston Publishing, and Free Software for Your Atari Computer, Enrich/Ohaus.

# BITS AND PIECES

## WITH A LOT OF HELP FROM OUR FRIENDS

by David L. Heller

**W**RITING BITS AND PIECES is always challenging and exciting. The challenge is trying to find good programs and concepts to present. The excitement comes just a few days before the ATARI CONNECTION goes to press, as I scramble around trying to fill this section with all those good programs and concepts.

But, in this issue, my job was made easier by the many innovative and useful programs submitted by our readers.

Please, keep sending in your great programs! Bits and Pieces is an open forum, designed to help you share your ideas with other Atari computer enthusiasts. We can't put this column together without a lot of help from our friends. Thank you!

### RECORDER FUN

*Inspired by Jim Singer*

**S**IXTEEN-YEAR OLD Jim Singer really started our wheels turning when he sent us a short program called "Audio." Jim's program plays a recorded cassette on your Atari 410 or 1010 Program Recorder and lets you listen to the music or speech on your TV's speaker.

Two simple POKE's are at the heart of the "AUDIO" program. POKE 54018,52 turns the recorder on, and POKE 54018,60 turns it off.

#### AUDIO

```
1 REM **BITS - AUDIO - Jim Singer/D.
  Heller**
10 GRAPHICS 0:POKE 710,99:POKE 752,1
20 POSITION 4,4:PRINT " Press 'O' to
  turn recorder on."
30 POSITION 4,5:PRINT " Press 'S' to
  turn recorder off."
40 IF PEEK(764)=8 THEN POKE
  54018,52:POKE 764,255:POSITION
  16,10:PRINT "ON "
50 IF PEEK(764)=62 THEN POKE
  54018,60:POKE 764,255:POSITION
```

```
16,10:PRINT "OFF"
60 GOTO 40
```

Listening to this concept in action is a snap. First, enter and SAVE the "AUDIO" program. Then:

1. Rush to your cassette library and grab your favorite recorded smash hit.

2. Insert the cassette into your recorder and depress the PLAY button.

3. RUN the program. You'll be prompted to: "Press [O] to turn the recorder on."

That's all there is to it! You'll be surrounded by beautiful(?) sound. When you get tired of listening to the recording, or someone complains about the noise, simply press [S] and the recorder stops, and so does the racket!

"That's nice," we said. But, we asked what good this knowledge would do us, or anyone else for that matter. The crew at ATARI CONNECTION worked day and night trying to find a practical use for these two POKE's. One brave soul suggested playing music through the TV's speaker to keep dedicated programmers awake. Another offered the idea of adding voice or musical accompaniment to a program. The search went on, until . . .

### DICTATOR

**W**HILE EXPERIMENTING WITH the AUDIO program, one of the staff accidentally played a cassette recording of Orson Welle's 1938 radio drama, *War Of The Worlds*. We all gathered around the TV listening in fascination as the Martians conquered the world. As we listened, a light bulb went off in someone's head, (anonymous for obvious reasons) and a brilliant idea was thrust upon us. "Why not use these two POKE's as the heart of a dictation machine!" He, she, it shouted.

Which leads me to the next program, "Dictator." Dictator is more inspiration and creativity than great programming excellence. But, as far as we know it is the first, and only, program that changes your Atari computer into a sophisticated dictation machine.

After Dictator is RUN, your computer and TV screen



become a simple word processor, with one important difference. You're able to listen to dictation from your TV's speaker by turning your recorder on and off from your Atari's keyboard while you transcribe your recorded message. And, when you're ready, or when the screen is full, the text you've typed-in can be printed out on your printer.

You've got to RUN and use this program to see and hear the excitement of Dictator. But, before you type in the program, make sure you have the necessary equipment to make use of your dictation machine.

You'll need:

1. Any model Atari computer with ATARI BASIC.
2. An Atari 410 or 1010 Program Recorder.
3. Any Atari compatible printer.
4. An adventurous soul.

If you qualify, then I strongly recommend trying this one out. Here's the listing. Type Dictator in, SAVE it, then RUN it and we'll review its operation.

## DICTATOR

```
10 REM ***Atari Audio Dictation by David
L. Heller***
20 CLR :POKE 764,255:OIM A$(FRE(0)-1000)
30 X=1:V=1:T=1
40 GRAPHICS 0:POSITION 4,3:PRINT "PRESS
CTRL+O TO TURN RECORDER ON"
50 POSITION 4,4:PRINT "PRESS CTRL+S TO
TURN RECORDER OFF"
60 POSITION 4,5:PRINT "PRESS CTRL+P TO
PRINT"
70 POSITION 4,6:PRINT "PRESS SHIFT+CLEAR
TO CLEAR MEMORY"
80 PRINT CHR$(13);
90 CLOSE #1:OPEN #1,4,0,"K"
100 GET #1,B
110 A$(X,X)=CHR$(B)
120 L=LEN(A$)/70
130 IF V/L=1 THEN V=V+1:PRINT
CHR$(B);CHR$(13);:X=X+1:GOTO 100
140 IF A$(X,X)=CHR$(155) THEN PRINT
A$(X,X);CHR$(13);:GOTO 240
150 IF A$(X,X)=CHR$(125) THEN RUN
160 REM ***RECORDER ON AND OFF***
170 IF A$(X,X)=CHR$(15) THEN CLOSE
#1:POKE 54018,52:GOTO 90
180 IF A$(X,X)=CHR$(19) THEN CLOSE
#1:POKE 54018,60:GOTO 90
190 P=LEN(A$)/500
200 IF P/T=1 THEN T=T+1:POKE 710,68:
CHR$(253):POSITION 5,1:PRINT "PRINT CONTENTS
OF SCREEN NOW":POKE 764,255:GOTO 90
210 REM *****
220 TRAP 250:IF A$(X,X)=CHR$(16) THEN
CLOSE #1:POKE 54018,60:GOSUB 270:GOTO 40
230 PRINT A$(X,X);
240 X=X+1:GOTO 100
250 POSITION 3,1:PRINT "PLEASE TURN
PRINTER/INTERFACE ON":FOR X=1 TO
500:NEXT X
255 REM **Enter 32 blank spaces between
quotation marks in line 260**
260 POSITION 3,1:PRINT " [Insert 32
Spaces] ":GOTO 50
270 POKE 710,148:B=7:OPEN #1,8,0,"P:"
280 FOR A=2 TO 39:LOCATE A,B,Z:PUT #1,Z
```

## How To Use DICTATOR

To use Dictator you'll first have to dictate a message, great prose, or utter nonsense onto a cassette tape, in stereo. Next, insert your masterpiece into your Program Recorder and press the [PLAY] button.

Turn on your printer, TV, and of course, your computer, and RUN Dictator.

Your screen displays these options:

```
PRESS CTRL+O TO TURN RECORDER ON
PRESS CTRL+S TO TURN RECORDER OFF
PRESS CTRL+P TO PRINT
PRESS SHIFT+CLEAR TO CLEAR MEMORY
```

Start by pressing the [CTRL] key plus the [O] key to start the recorder. Then, as your words pour forth from the TV's speaker, begin typing. Press the [CTRL] key plus the [S] key to stop the recorder, and press the [CTRL] key plus the [P] key to print the contents of your screen.

You can use all of your Atari's editing features to correct any typos. But, **never** press RETURN. This simplistic program is designed to print exactly 70 characters per line on your printer. If you press RETURN you'll destroy this illogical logic.

When your screen is filled with prose it turns red and you are prompted to "PRINT CONTENTS OF SCREEN NOW." So, when you see this prompt, press the [CTRL] key plus the [P] key to see your handy work.

I use Dictator to write. I sit under the loquat tree and dictate into my portable cassette recorder, then I transcribe and print out my jumble in front of my Atari computer. I'm sure you'll find more creative uses for this program. You also might consider spiffing it up a bit.

Here are a couple of ideas:

## Turn on Your Programming Imagination

1) The string variable A\$ contains all of your text. Add a routine to the program that lets you save your text to disk to be loaded back into a word processor, like AtariWriter, for editing.

2) Devise a better method of truncating each line's end. See if you can add a word wrap feature to the program.

# A BLINKING CURSOR

By Craig Hefner

**C**RAIG HEFNER FROM CANTON, Georgia was irate. "Every well known computer, except the Atari computer, has a flashing cursor!" he said in his letter. Craig set out to remedy this inequity by writing this short machine language program called "Flasher."

After you run Flasher not only will your cursor wink and blink—all the characters printed in inverse video will wink at you. Flasher is a persistent program. After it's been imbedded into your Atari computer's memory even the cursor on your DOS will blink!

Craig's routine starts on line 30000. We've added a short BASIC program in lines 20 through 30. The word "BLINKEROONIO" in line 20 should be entered in inverse video (press the Atari symbol key).

So, put on your sunglasses and RUN Flasher!

## FLASHER

```
1 REM ***FLASHER***
10 GOSUB 30000
20 PRINT CHR$(125):POSITION 14,10:PRINT
"BLINKEROONIO!"
30 FOR X=1 TO 500:NEXT X:LIST :END
```

```

30000 Y=0:I=0:RESTORE 30050
30010 READ X:Y=Y+X
30015 IF X=-1 THEN GOTO 30030
30020 POKE 1536+I,X:I=I+1:GOTO 30010
30030 IF Y=8959 THEN A=USR(1536):RETURN
30040 PRINT "BAD DATA":END
30050 DATA 104, 162, 6, 160, 0, 132,
205, 160, 19, 169, 8, 133, 206, 169, 7,
32, 92, 228, 96, 72, 138, 72, 165, 206,
240, 39, 230, 205
30060 DATA 165, 205, 197, 206, 208, 25,
169, 0, 133, 205, 165, 204, 208, 10,
169, 2, 141, 243, 2, 133, 204, 76, 59,
6, 169, 0, 141, 243
30070 DATA 2, 133, 204, 104, 170, 104,
76, 98, 220, 169, 2, 141, 243, 2, 76,
59, 6, -1

```

### Important Programming Tip

Whenever you type-in a machine language program like this, always SAVE the listing to disk or cassette before you RUN it. If you've made any entry mistakes, and you haven't SAVED your program, the computer is liable to "lock up" and you'll have to re-type the program again.

## THERE'S MORE THAN ONE WAY TO ENTER DATA

**C**RAIG HEFNER'S FLASHER PROGRAM, and many others, read machine language data into memory locations for execution by a USR command. Reading data into a location has a couple of drawbacks. First, it takes time to read in the data. And second, you must find an unused area of RAM to store the data.

### String Loading

A method, called *string loading*, enables you to get around these two drawbacks.

To use string loading, you first convert each data number to its ATASCII character equivalent. For example, in Craig's program the number 104 would be converted to a lower case "h." After you've converted each data number to its character equivalent, you dimension a string variable equal to the length of your new string, and assign your string a variable name.

Here's an example that illustrates the concept of string loading. But don't try to RUN it. This is only an example. Suppose the line of data you want to convert reads:

DATA 65,104,36,43

1. Dimension a string variable equal to the length of the string. There are four numbers to be converted, so if you chose A\$ as your variable your dimension statement will look like this:

```
10 DIM A$(4)
```

2. Your next program line will look like this:

```
20 A$="Ah$+"
```

These two lines of programming place the machine language data into A\$'s Address [ADR(A\$)].

To direct the USR routine to the USR routine's data you

"tell" it that the data is stored in A\$'s Address like this:

```
D=USR(ADR(A$))
```

That's all there is to it—

Some very nice advantages:

1. **Less Memory:** Strings use less memory than any other form of numerical array.

2. **Protection:** Strings are automatically placed in a protected area of your computer's memory.

3. **Faster Than a Speeding Bullet:** Strings load data into your program faster than any other method.

There are, however, a few limitations to this method:

1. If your data statement contains the numbers "34" or "155" you can't use string loading. Your computer gets angry and won't accept the ATASCII Codes for these two numbers. 34="(quotes)", which ends the string, and 155=EOL(End of Line) which does the same. They are the ATASCII codes for invalid string DATA.

2. All data must be in the form of positive numbers ranging from 0 to 255.

3. The machine language routine must be "relocatable". The machine language routine in the Flasher program was designed to work only in location 1536. If you try to place Flasher's data into a string variable address, the routine won't work!

There are ways around this. If you are adept at machine language programming you can convert the machine language code. If you're not, I'll show you how to overcome this limitation later in the next section.

## CONVERTING DATA TO ATASCII

### Characters Made Simple

by James Rice

Converting your data to ATASCII characters can be a tedious task. You have to look up the decimal code in an ATASCII Character Set chart, and convert each data number one by one.

James Rice of Philadelphia, sent us a program called "Convert" that makes the job of converting data into ATASCII characters a snap. First type in Convert, SAVE it, RUN it, and I'll show you how it's used.

### CONVERT

```

29999 REM CONVERT
30000 CLR :DIM L$(5),V$(5),A$(50),Y$(95)
30100 ? CHR$(125):? "ENTER THE NUMBER OF
DATA STATEMENTS TOBE CONVERTED:";
30200 TRAP 30100:INPUT N
30300 ? :? "ENTER A LINE NR. & ASSIGN A
VARIABLE"
30400 ? :? "LINE NUMBER:";
30500 INPUT L$
30600 ? :? "STRING VARIABLE NAME (LIKE
'A$'):";
30700 INPUT V$
30800 ? CHR$(125):POKE 710,0: ? :?
"*****BEGIN ENTERING DATA*****":?

```



```

30900 TRAP 31800:PRINT A+1;"-- ";;INPUT
X
31000 IF X>=27 AND X<=31 THEN GOTO 31800
31100 IF X>=125 AND X<=127 THEN COTO
31800
31200 IF X>=156 AND X<=159 THEN GOTO
31800
31300 IF X>=253 AND X<=255 THEN COTO
31800
31400 IF X>255 OR X=155 OR X=34 THEN ?
CHR$(253):? "INVALID ENTRY":COTO 30900
31500 Y$(LEN(Y$)+1)=CHR$(X):A=A+1:Q=Q+X
31600 IF A>=N THEN COTO 32100
31700 COTO 30900
31800 A$=CHR$(27):
A$(LEN(A$)+1)=CHR$(X):
Y$(LEN(Y$)+1)=A$:A=A+1:Q=Q+X
31900 IF A>=N THEN COTO 32100
32000 GOTO 30900
32100 ? CHR$(125):POSITION 2,10: ? L$;"

```

After you run Convert you'll be asked to "ENTER THE NUMBER OF DATA STATEMENTS TO BE CONVERTED." Reply by entering the correct number, then press [RETURN]. In the example shown above, there are four (4) data statements.

Next, you'll be asked to enter "A LINE NUMBER." This is the line number where you want your string variable statement to reside in your program. Enter a line number and press [RETURN]. In the above example, the string variable statement resides at Line 20.

Finally, you'll be asked to assign a "STRING VARIABLE NAME." In the above example, the string variable name is "A\$." Enter any string variable name you'd like, then press [RETURN].

Once this initialization process is finished, begin entering data numbers. Press [RETURN] after each entry.

After you've entered all the data, the program will Stop, and the converted data will appear on your screen. If you used the above example, you'll see:

```
20 A$='Ah$+'

```

Replace the two hyphens with quotation marks, press [RETURN] and LIST this one-line statement to disk or cassette so you can ENTER it into your program.

LIST line 20 to disk like this:

```
LIST"D:NAME",20 [RETURN]

```

List line 20 to tape like this:

```
LIST"C:",20

```

## A Practical Example

To see how string loading is used in a real application, use the Convert program to convert the data in the Flasher program to a string. Then insert the ATASCII characters between the quotes in Line 20 of the Blinker program.

## BLINKER

```

1 REM **BLINKER**
10 CLR :DIM A$(73)
20 A$="[Machine Language routine
converted to ATASCII characters]"
30 I=0:FOR X=ADR(A$) TO ADR(A$)+73:POKE
1536+I,PEEK(X):I=I+1:NEXT X
40 A=USR(1536)

```

## Tip

As I mentioned before, the machine language code in the Flasher program is **not** relocatable. It must reside in location 1536. To get around this, I transferred the data from ADR(A\$) to location 1536 in Line 30.

Have fun with the Convert program. Now you can scour the back issues of magazines that use machine language routines in data statement form, and convert them to string loading.

# ONE LETTER AT A TIME

by Charles Miller

Here's a short and simple program submitted by Charles G. Miller that prints your message, one character at a time, in graphics modes 0, 1 or 2. And, the printing is accompanied with weird sound!

Charles says that, "this routine may come in handy one day." And, we're sure that you'll find many uses for this graphic technique in your programs. So, here's "Grapheek!"

## GRAPHEEK

```

1 REM ** GRAPHEEK **
10 DIM A$(34)
20 GRAPHICS 1
30 A$="THIS IS A GRAPHICS
DEMONSTRATION"
40 FOR I=1 TO 34: ? #6;A$(I,I);
50 S=PEEK(53770)
60 SOUND 0,S,10,14
70 FOR DELAY=0 TO 100:NEXT DELAY

```

# DELETE THOSE LINES

by Jeff Stefanski

Here's a short subroutine by Jeff Stefanski of Kirkwood, Missouri called "DEL." DEL lets you delete a bunch of program lines automatically.

Attach DEL to the end of your program by ENTERing it from cassette or disk. Then activate it with a GOTO 32000 statement.

Enter the first and last line numbers you want deleted and DEL does the rest. Instant irradiation! When you're finished, you can use DEL to delete itself. Only the last two lines (32006 and 32007) have to be deleted manually.

## DEL

```

31999 REM ** DELETE **
32000 GRAPHICS 0
32001 PRINT CHR$(125):PRINT "ENTER FIRST
LINE";
32002 INPUT FIRST
32003 PRINT "ENTER LAST LINE";
32004 INPUT LAST
32005 FOR LINE=FIRST TO LAST:PRINT
CHR$(125):POSITION 2,6:PRINT LINE
32006 POSITION 0,0:POKE 842,13:POSITION
2,7:PRINT "CONT":POSITION 2,4:STOP
32007 POKE 842,12:NEXT LINE:COTO 32000

```

# COMPUTER COMFORT

## THE MYSTERIOUS CURLY BRACKET *or How to Type in Those Magazine Games*

by Jane Sokolow

**T**HERE YOU ARE in front of your new computer, surrounded by helpful-sounding books and interesting-looking magazines. You're eager to get the machine to really show its stuff. You decide to type in a program from a magazine or book. When you're through, you figure you'll not only have a nifty little item to show your friends, but you will have learned a bit of programming.

Not a bad line of reasoning. I've done it numerous times. Bear in mind, however, that many of the programs listed in publications are written by professionals who put their favorite shortcuts and tricks into their work. The bulk of their programming expertise may not find fertile ground in your experience for months. But this little article should help you get the program of your choice up and running.

### Printing Limitations

Often the program listing you see in your favorite magazine was made by printing directly from the computer's memory (RAM). This procedure ensures accuracy. That is, if the program works, and is printed out as is, rather than retyping it and risking making a mistake that would be hard to catch. (Magazine proofreaders are good at catching typos in English, but they have to test a computer program to catch any mistakes. Also, typesetters may be great at typing, but don't usually know program structure.) However, some of the characters found in the program listing can't be handled by a computer printer. The Atari 825 printer, for example, cannot print inverse video or special characters made in combination with the [CTRL] key. Consider how you would present ten spaces—would you print ten spaces and expect the reader to count each one?

### What Language Is the Program Written In?

Make sure the program listing is in the correct language for whatever cartridge you're using — ATARI BASIC, MicroSoft BASIC, PILOT, Logo, whatever. If the directions just say "BASIC" you'd better scrutinize the listing. ATARI BASIC has some important differences from other BASICs (generally of the MicroSoft variety). Are there functions like PRINT USING or TAB(XX)? If so, that's not ATARI BASIC and the program is likely not to work.

### Programming Conventions

Next, find the explanation for whatever conventions the publication is using for those unprintable characters mentioned above. Most books have a section in the front, and most magazines have one in the back, or adjacent to the program listing. (See the special conventions listing on page 56.) Such charts are designed to explain it all to you, but beginners sometimes need more.

### The Action Keys

The curly brackets are used to indicate a special code and are not to be typed in literally (you can't anyway). The conventions that give most people trouble are those requiring the [ESC] key. These are the "action" keys, like the

cursor directional keys, the buzzer, TAB, DELETE or CLEAR. If you press any of these keys then press RETURN without first pressing the [ESC] key, something will happen...the buzzer will sound, the cursor will move, or the screen will clear. You want these functions performed only when your program is running. To enter one of these, first press the [ESC] key, then release it, and type [CTRL] plus the indicated key. If more than one sequence is indicated (for example [2 DOWN]) you must press the [ESC] key before you press the [CTRL]+[DOWN ARROW] each time. If you have followed this sequence correctly, downward-pointing arrows will appear on your screen (but will not print on your printer). If you forget to press the [ESC] key first, your cursor will move two spaces down, and your program won't work.

### Entering DATA

Entry errors often occur when typing in DATA statements. DATA statements are program lines starting with the word DATA and followed by numbers or letters. Letters are usually no problem. But numbers are eye doctor heaven. There are two main problems with typing in billions and billions of numbers. The first is simple fatigue—it's easy to miss one or two numbers when you're looking up at the screen then down at the paper all the time. To overcome this difficulty, place the program listing on a flat surface, and use a ruler or other straight-edge to underline each line of data as you type it in.

Data statement problems are often difficult to debug. You must figure out which variables are using which DATA entries at which time, and trace them through their functions. But there's another use for this BASIC feature which is even harder to debug. The programmer can write an Assembly language subroutine and then, with some tricky maneuvering using cartridges and recording devices, convert this subroutine into a series of numbers, which is inserted into a BASIC program through DATA statements. These subroutines are often found in game programs where speed is desirable, and BASIC is often too slow.

Unless you have the Assembly subroutine in hand, understand it, and know how it correlates to the numbers, you can't possibly debug it.

Fortunately many magazines help you find your entry errors by embedding debugging utilities in the program (as in our Summer issue, "Computer Animation," lines 20010 and 20020). Debugging utilities might also be found in another section of the magazine, or in a previous issue. These "checksum" utilities essentially add up all the numbers in the DATA statements and check your entries against the correct sum.

### If All Else Fails

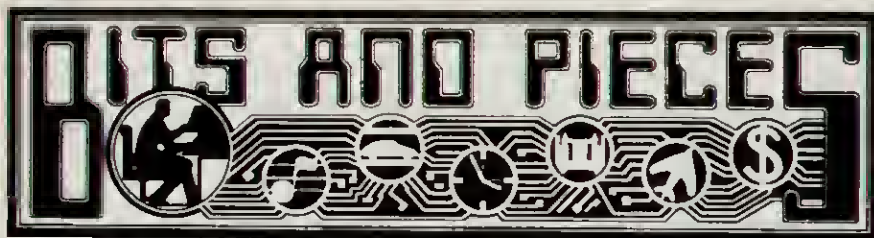
If all else fails, and you know you've entered the data correctly and the program still doesn't work, your last recourse is to call or write the publication. If there is a bug in the program, they are usually happy to correct it. If you find a bug in the ATARI CONNECTION, call our toll-free help line (800)672-1404 (inside California), (800)538-5282 (Hawaii or Alaska) or (800)538-8543.

### Cuddle Up with Your Atari Computer

Winter is a lovely time to hole up with your Atari computer and spend hours cuddled up by a flickering CRT. Make it a great holiday season, have a Happy New Year, and save your work as you go. See you next year!

Jane Sokolow is a Product Specialist in the Customer Relations Department at Atari, Inc.





## to BITS AND PIECES

### Submitting a Program or Subroutine

To prepare a program or subroutine for submission to *Bits and Pieces*, follow these guidelines:

1. Give your program or subroutine a name of eight or less characters.

2. Write a brief description of the task performed by your program or subroutine and describe any special features.

3. Write a few lines about yourself and how you came to develop your program or subroutine.

4. If you are a more experienced programmer, then be sure to include the following information:

- List all variables (ENTRY, EXIT, DIM)
- List all IOCBs used in OPEN statements
- Any other special routines or characters
- List the variables which may be generated by the subroutine and passed back to the main program (exit variables).

5. Send your program on cassette or diskette, along with printed listing, to:

Bits and Pieces  
ATARI CONNECTION Magazine  
P.O. Box 3427  
Sunnyvale, CA 94088-3427

6. Be sure to include your mailing address and phone number.

Even if you don't consider yourself an "expert" or "advanced" programmer, don't be discouraged! "Bits and Pieces" is for experts and beginners alike. So don't be shy. Even novices develop programs and routines that are of interest to others.

By submitting a program, you consent to its publication and use in ATARI CONNECTION and elsewhere. Media and manuscripts not used will be returned if you include a self-addressed, stamped envelope. If your entry is published in ATARI CONNECTION, you will receive your choice of Atari software, worth up to \$30.

## ERRATA PHONES

IN THE FALL, 1983 issue, our article, "Public Domain Software" listed seven electronic bulletin board phone numbers you could call to download public domain software. The large number of readers who enjoyed their first stint at "networking" was a good indication of a successful article. Unfortunately, we published the wrong number for the Eugene, Oregon A.C.E. Users' Group. The correct number is:

Eugene, Oregon A.C.E.  
503-343-4352

For those of you who may have purchased the book, *Free Software for Your Atari Computer*, by Dave Heller, please note: Make this correction to the book's Eugene, Oregon A.C.E. listing. The wrong number was also published in the first edition of *Free Software*.

In addition, on page 16 we made a tutorial error in the "Public Domain Software" article. Under the subtitle, "Storing Your Downloaded Program," third paragraph, the command for storing a program on cassette should read:

C:[RETURN]

Delete the word, "Filename." You don't have to type a filename to save a program on cassette tape.

## COMPUTER CLASSROOM

### SPECIAL LISTING INSTRUCTIONS

1. All inverse video characters (characters entered after pressing the "Atari Key" — light background and dark letters instead of dark background and light letters) will be underlined. In the following example, the letters C, E and F should be entered in inverse video:

S\$="ABCDEFGHI"

2. Control characters (those entered while holding down the Control button) will be surrounded by curly brackets {}. All of the Atari's graphic characters are accessed while depressing the control (CTRL on the keyboard) button. In the following example, the letters B, G and H are control characters:

C\$="A{B}CDEF {G} {H}IJ"

3. Special cursor and screen

keys will be represented by printing the name or description of the key within curly brackets {}. To enter these special keys into a string, you will need to press the ESC key first. This puts the code for the key into the string instead of actually carrying out the action. In the following example, we want to clear the screen on line 100. To do this, first press the ESC key, then hold the shift key down and press the key with the word CLEAR on it (it has a < on it). When the line is executed, the screen will clear:

100 PRINT "{CLEAR}"

In the next example, the cursor key with the arrow pointing down is used. When this line is executed, the computer will print the word HI, move the cursor down one line and then print BYE.

To enter this character, first press the ESC key, then hold the CTRL key down and press the key with the down arrow and '=' on it:

110 PRINT "HI {DOWN}  
BYE"

When executed, you will see the following on your screen:

HI  
BYE

4. When a number appears before a curly bracketed word, it means we want you to enter that character the indicated number of times. In the following example, we want you to enter the letters "ABCDE," then one cursor down, then five cursors left, and finally the letters "FGHIJ."

120 PRINT "ABCDE  
{DOWN} 5 LEFT  
FGHIJ"

When this line is executed, you will see the following on the screen:

ABCDE  
FGHIJ

This technique of embedding the cursor characters enables us to create a block of characters which can be PRINTed with one statement.

5. When spaces are important to an animation, as they are in the program, we will represent a space with a lower case b with a slash through it:

b

This will enable you to enter the correct number of spaces. As before, if the b character is underlined, enter the space as an inverse video character.

# COMPUTER CLASSROOM

## *Bombs Away!*

### ANTIC Mode 4 and the Exploding Three-Color Character Set

by David Fox and Mitchell Waite

**T**HE ATARI COMPUTER has a graphics mode that lets you display a custom character set in three colors. In the "Exploding Bomb" program at the end of this article, a whistling bomb drops from the top of the screen and explodes in a burst of color and sound. And it's all done by manipulating one of the Atari computer's dedicated microprocessors — ANTIC.

#### Introducing ANTIC

The Atari computer's twelve graphics modes might sound like more than enough for any application, but they're just the beginning! One of the things that makes the Atari computer so versatile for creating animation is its custom chip set. Rather than giving all of the graphics work to the computer's main microprocessor, Atari designed two LSI (Large Scale Integration) chips to help share the load.

One of these chips, called "ANTIC," converts the bytes in screen memory into a form that can be displayed on your television screen. Since ANTIC is a microprocessor, it executes a **program** (called the Display List), processes **data** (screen memory), and produces **output** (to the television screen).

#### ANTIC Display List

The Display List specifies (among other things) the graphics modes to be used on the screen. By altering the Display List, the screen can be horizontally divided into many different strips or ribbons of graphics modes. Modifying this Display List can give you a great deal of flexibility when designing the appearance of the computer's video output.

When using the GRAPHICS command in a BASIC program, the Atari computer's Operating System (OS) automatically sets aside the right amount of screen memory for that mode. The OS also creates a Display List that tells ANTIC how to interpret the data (bytes) in screen memory: It tells screen memory if the bytes should be interpreted as text characters or as plotted points. The Display List also specifies the size of each character or pixel, and how many colors it can have.

#### Modifying the Display List

By modifying the Display List, you can activate some additional graphics modes that are not supported by the Atari 400 or 800 Operating System. The Exploding Bomb program uses one of these additional graphics modes: ANTIC Mode 4. Don't confuse ANTIC 4 with BASIC's GRAPHICS Mode 4 — they are totally different. The built-in ATARI BASIC in the new Atari XL computers has a *Graph-*



Below is a table that contrasts ANTIC Mode 4 with ATARI BASIC, GRAPHICS Modes 3 and 8. The Pixels per Column and Bytes per Screen are calculated for the full screen modes (GRAPHICS N + 16). The chart shows that the number of bytes needed for each mode depends on the resolution (number of pixels), the available number of colors, and if the mode is either a Map Mode or Character Mode.

[illegible][illegible]

. . . . .		.	.	.	.	.		7	0
. . . . .		.	.	.	.	.		8	0
. . . . .		.	.	.	.	R	.	9	16
. . . . .		I	R	.	R	O	.	65	32
. . . . .		.	R	.	O	I	O	17	128
. . . . .		.	.	.	O	I	O	34	280
. . . . .		.	.	.	O	I	O	43	228
. . . . .		.	.	.	O	I	O	11	249
. . . . .		.	.	.	O	I	O	27	228
. . . . .		I	R	R	O	I	O	91	280
. . . . .		.	.	.	O	I	O	26	192
. . . . .		.	.	.	O	I	O	2	160
. . . . .		.	.	.	O	I	O	10	16
. . . . .		.	.	.	O	I	O	6	4
. . . . .		I	R	O	.	.	.	24	4
. . . . .		.	.	.	.	.	.	0	

. . . . .	. . . . .	R . . . O . R R	64	133
. . . . .	. . . . .	I R R . . IO . R .	80	132
. . . . .	. . . . .	I . R . . IO R O .	29	152
. . . . .	. . . . .	I . R R O R I O O O .	25	168
. . . . .	. . . . .	I . R O O I R O . .	26	96
. . . . .	. . . . .	I . . O O Y I Y O R .	10	228
. . . . .	. . . . .	I R R O Y Y I Y O R R	91	229
. . . . .	. . . . .	I . R O Y Y Y R R	27	245
<hr/>				
. . . . .	. . . . .	I . . O Y Y O R . .	11	228
. . . . .	. . . . .	I . R O Y Y I Y O R .	27	280
. . . . .	. . . . .	I . R O O O I O R . .	106	144
. . . . .	. . . . .	I R R R O I O Y R R O	86	182
. . . . .	. . . . .	I . . O I O O R R I	2	165
. . . . .	. . . . .	I . . O O I . O . .	10	32
. . . . .	. . . . .	I . . R R I . R R .	5	29
. . . . .	. . . . .	I . . R . . . R . .	4	

ANTIC Mode	BASIC Mode	Char Mode	Number Colors	Pixels/Line	Pixels/Column	Bytes/Line	Bytes/Screen
4	None	Char	4	40	34	40	960
8	3	Map	4	40	34	10	240

ANTIC 4 uses the same amount of screen RAM as GRAPHICS 0. It is very similar to GRAPHICS 8 with one exception: Instead of each bit in the character definition representing a dot on the screen (either on or off), the bits in each row are paired. By considering this pair of hits as one pixel, the horizontal resolution is halved, so that each character is now 4 double-wide dots across (instead of 8 single-wide dots), and 8 horizontal scan lines down (as in GRAPHICS 0).

Take a look at the SETCOLOR Table below. If the hit pattern is 01, you control that pixel's color with SETCOLOR 0; if the pattern is 10, use SETCOLOR 1; and if the pattern is 11, use SETCOLOR 2.

Bit pair in character definition	Use following setcolor value
00 .....	SETCOLOR 4
01 .....	SETCOLOR 0
10 .....	SETCOLOR 1
11 .....	SETCOLOR 2
11 (inv. video) ...	SETCOLOR 3

Next, set the color registers:

**SETCOLOR 4,0,0 (Black)**  
**SETCOLOR 0,3,6 (Red)**  
**SETCOLOR 1,7,6 (Blue)**  
**SETCOLOR 2,12,6 (Green)**  
**SETCOLOR 3,6,6 (Purple)\***

**\*If we printed this character in inverse video, only the bottom band of color would change. It becomes purple because its color is now controlled by SETCOLOR 3, instead of SETCOLOR 2. Glance at the "SETCOLOR Table" and you'll get the picture.**

This sample character will be displayed as three horizontal bands of color (one red, one blue, and one green) separated by two thin stripes of black (the background color).

**Fig. 3: Character Definition for Striped Character**

	bit pattern	byte value	displayed	inverse
row 1	01010101	85	RRRR	RRRR
row 2	01010101	85	RRRR	RRRR
row 3	00000000	0	RRRR	RRRR
row 4	10101010	170	RRRR	RRRR
row 5	10101010	170	RRRR	RRRR
row 6	00000000	0	RRRR	RRRR
row 7	11111111	255	RRRR	RRRR
row 8	11111111	255	RRRR	RRRR

## The Character Set

Now that you have a basic understanding of how characters in ANTIC 4 are displayed, let's look at the character set for our Exploding Bomb program.

The actual explosion is created with four frames, each made of a box of four characters arranged in a 2 by 2 array. Each frame shows the explosion in a different shape and becoming larger. By consecutively PRINTing each frame at the same screen position, we will see what looks like an expanding explosion.

We also have to define a single character for our falling bomb.

## Character Definitions/Exploding Bomb

In the Character Definition figure, the bit pattern of each character is shown to the left, the actual characters and colors as they will appear on your screen are in the center, and the decimal values needed to define each character are on the right.

The pixels that make up each character are now rectangular instead of square! This decrease in resolution, as we mentioned before, makes it a little more difficult to represent a detailed figure. But, we can display three-color characters!

Here's the Exploding Bomb program. When it's RUN you'll see a whistling bomb drop from the top of the screen to explode in a burst of color and sound at the bottom of the screen.

Use the **Special Listing Instructions** on page 56, to type in this program.

# The Exploding Bomb

## Here's How the Exploding Bomb Works!

**Lines 70-90 — High-Speed Subroutines:** There are three subroutines at the very beginning of the program. These are placed up front for a reason. In ATARI BASIC, the closer a section of code is to the

beginning of the program, the faster its execution speed is. We placed most of the initialization subroutines and data towards the end of the program, and the time-critical animation loops towards its beginning.

**Line 70:** Three of the sound registers are turned on with random explosion-like sounds. Once the registers are on, this line is executed again to randomly change the sound quality of the explosion.

**Line 80:** This line rapidly flashes the screen background ten times with random colors. The flash is used at the first instant of explosion.

**Line 90:** This line sets the colors of the explosion and also fades out the explosion's brightness.

**Lines 110-240 — Initialization:** In addition to standard initialization, line 20 calls up the Display List modification subroutine.

**Lines 8000-8160 — Set Up Alternate Characters:** These lines are identical to those used in the Walking Man program found in the Summer '83 edition of ATARI CONNECTION. The only thing changed is the value assigned to CHARS in line 8040.

**Lines 6000-6050: Modify Display List:** This is the section where we modify the display list to ANTIC 4. Because GRAPHICS 0 is so close to ANTIC 4, we only need to change the values in the already existing Display list:

- 1) In line 6010 we find where the Display List is in memory.
- 2) In line 6020 we change the Display List instruction that controls the first text line. (There's more on this in our book, *Computer Animation Primer*)
- 3) In line 630 we change the Display List instruction for text lines 2 through 24 by POKEing in a 4 (that's why it's called ANTIC 4).

When this subroutine is executed, you'll see what looks like a black curtain rapidly descending over your screen as each byte of the Display List is modified.

**Lines 600-700: Falling Bomb:** This subroutine displays the falling bomb. The spot on the screen where the bomb will explode is randomly selected in line 620. The selected vertical coordinate (Y) will always be in the lower half of the screen. A FOR/NEXT loop is then used to erase and redraw the bomb.

As the bomb falls, sound register 0 is used to create a whistling sound. The whistling sound was split in to two lines: 640 and 660, to create a more even whistle without slowing down the bomb.

**Lines 300-520: Animation Loop:** This is where the entire explosion is orchestrated. After setting the LUMinance (brightness of color) and VOLume levels to their initial values in line 310, the bomb is dropped in line 320. The color registers are reset, the explosion sound turned on, and the background flashed.

The frame loop, lines 300-400, is identical to the Walking Man program. We didn't need to erase the explosion after each frame, just write over it. Instead of a pause loop, the sound of the explosion is changed to add the effect of randomness to our pre-drawn graphics.

In lines 410 to 490, the LUMinance values of the last explosion frame, as well as the VOLume level of the sound registers, fade out. This technique of altering the SETCOLOR values gives the illusion of motion when none is taking place.

Finally, line 599 waits for a random period of time before dropping the next bomb.



## Have Some Fun

That's all there is to it! Now RUN the program and watch the "Bomb" drop from the sky. If you want to take a closer look at your "Bomb character," press the [CTRL] key plus the "1" key to stop the action.

Have some fun by changing the color values in the SETCOLOR statements in line 610.

You might also try replacing the number "4" in line 6030 with a "5" to see what ANTIC 5 looks like.

The best way to learn new concepts is to experiment with the program. Have fun!

## The Exploding Bomb

```

50 GOTO 110
60 REM Hi-speed Subroutines
70 SOUND 0,RND(0)*150+30,0,VOL:
  SOUND 1,RND(0)*80+175,2,VOL:
  SOUND 2,RND(0)*150+30,8,VOL: RETURN
80 FOR I=1 TO 10:
  POKE 712,RND(0)*255:
  NEXT I:
  POKE 712,0:
  RETURN: REM Flash
90 SETCOLOR 0,4,LUM(0):
  SETCOLOR 1,2,LUM(1):
  SETCOLOR 2,1,LUM(2):
  RETURN: REM Color
100 REM Initialize
110 FRAMES=4: REM Number of frames
120 FRMSZE=7: REM Characters in frame
130 DIM EXPL$(FRAMES*FRMSZE),FRAME$(FRMSZE),LUM(2)
140 EXPL$="ab(DOWN)(2 LEFT)def(DOWN)(2 LEFT)
  ghij(DOWN)(2 LEFT)klmn(DOWN)(2 LEFT)op"
160 GRAPHICS 0
170 POKE 752,1: REM Turn off cursor
180 PRINT "One moment please..."
200 GOSUB 8000: REM Read in Character Set
210 PRINT "(CLEAR)"
220 GOSUB 6000: REM Alter Display List
230 POKE 756,HICHRB: REM Switch to new Char Set
240 REM
300 REM Animation Loop
310 LUM(0)=6:
  LUM(1)=8:
  LUM(2)=12:
  VOL=14
320 GOSUB 600: REM Falling Bomb
330 GOSUB 90: REM Set colors
340 GOSUB 70: REM Turn on sound
350 GOSUB 80: REM Flash background
360 FOR I=1 TO FRAMES
370   FRAME$=EXPL$(I*FRMSZE-(FRMSZE-1),I*FRMSZE)
380   POSITION X,Y:
  PRINT FRAME$:
390 GOSUB 70: REM Change sound
400 NEXT I
410 FOR J=0 TO 2: REM Fade out explosion
420   LUM(J)=LUM(J)-2
430   IF LUM(J)<0 THEN
  LUM(J)=0
440 NEXT J
450 GOSUB 90
460 VOL=VOL-1:
  GOSUB 70: REM Fade sound
470 IF LUM(2)>0 THEN 410
480 PRINT "(CLEAR)"
490 IF VOL>0 THEN
  VOL=VOL-1:
  GOSUB 70:
  GOTO 490: REM Fade sound off
500 FOR W=1 TO INT(RND(0)*400+50):
  NEXT W: REM Random pause
510 GOTO 310
600 REM Falling Bomb
610 SETCOLOR 0,3,8:
  SETCOLOR 1,7,6:
  SETCOLOR 2,6,6
620 X=INT(RND(0)*36+2):
  Y=INT(RND(0)*10+12): REM Select random explosion point
630 FOR I=0 TO Y-1
640   SOUND 0,I*2+16,10,8

```

```

650   POSITION X,I:
  PRINT "(DOWN)(LEFT)q":
660 SOUND 0,I*2+17,10,8
670 NEXT I
680 PRINT "(CLEAR)":
  SOUND 0,0,0,0
690 RETURN
6000 REM Modify Display List
6010 DLIST=PEEK(560)+PEEK(561)*256: REM Find Display List
6020 POKE DLIST+3,68: REM LMS byte plus 4 (line 1)
6030 FOR I=6 TO 28:
  POKE DLIST+I,4:
  NEXT I: REM Lines 2 through 24
6040 RETURN
8000 REM Set Up Alternate
  Character Set
8010 HICHRB=PEEK(106)-8: REM Reserve memory space
  (1024 bytes) below screen
8020 CHRBAS=HICHRB*256: REM Find start of Character Set
8030 REM Read in data, skip first 97 characters
8040 OFFSET=97*8:
  CHARS=17
9060 READ TOTAL:
  TEMP=0
8070 FOR I=CHRBAS+OFFSET TO CHRBAS+OFFSET+CHARS*8-1
8080   READ BYTE:
  POKE I,BYTE:
  TEMP=TEMP+BYTE
8090 NEXT I
8100 IF TOTAL<TEMP THEN
  GRAPHICS 0:
  PRINT "ERROR In Character Set Data":
  END
8110 REM Clear out first char (background)
8120 FOR I=CHRBAS TO CHRBAS+7
8130 POKE I,0
8140 NEXT I
8150 RETURN
20000 REM Character Set Data
20010 REM . Checksum
20020 DATA 2264
20030 REM
20040 REM . Frame 1
20050 DATA 0,0,0,0,3,50,10,2
20060 DATA 0,0,0,0,16,128,128,176
20070 DATA 58,10,2,1,3,0,0,0
20080 DATA 160,172,196,64,0,0,0,0
20090 REM
20100 REM . Frame 2
20110 DATA 0,0,0,8,2,43,11,3
20120 DATA 0,0,0,0,32,190,192,224
20130 DATA 11,3,15,24,32,64,0,0
20140 DATA 232,192,48,32,16,0,0,0
20150 REM
20160 REM . Frame 3
20170 DATA 0,0,0,65,17,34,43,11
20180 DATA 0,0,16,32,128,208,228,249
20190 DATA 27,91,26,2,10,8,24,0
20200 DATA 228,208,192,160,16,4,4,0
20210 REM
20220 REM . Frame 4
20230 DATA 64,80,20,25,26,10,91,27
20240 DATA 133,132,152,168,96,228,229,245
20250 DATA 11,27,106,86,2,10,5,4
20260 DATA 228,208,164,182,165,32,20,4
20270 REM
20280 REM . Bomb
20290 DATA 20,215,215,60,60,60,40,40

```

Voyage through Dr. Wacko's action-packed universe of Atari arcade game programming as the master gamesman himself unveils the little-known secrets of Atari BASIC game design. You can create games that sizzle! Games that ZAP . . . POW . . . BZZZZRK!

Dr. Wacko and his motley gang of live-in cartoon characters (created by David Heller, John Johnson, and Robert Kurcina) explain everything Atari BASIC programmers need to design games on any Atari computer. But wait . . .! Atari owners *without* disk drives need not worry—DR. WACKO is also available in book-only form (you'll just have to type in the programs yourself!).

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# TEN TIPS FROM THE PROGRAMMING PRO

## *Bill Wilkinson's Tips For Getting More*

**B**ACK IN 1978, when Atari was first getting into the computer business, it contracted a small company by the name of Shepardson Microsystems into writing a BASIC language and a disk operating system (DOS) for its new line of computers with super graphics. Five years later, many of the people from Shepardson Microsystems are now part of another small but growing company, Optimized Systems Software, Inc. (O.S.S.). O.S.S. is now producing advanced systems software (languages, operating systems, etc.) for the next generation of Atari computers with the now famous super graphics.

Bill Wilkinson, the vice president and technical director for Optimized Systems Software, Inc. is the one who wrote most of the specifications for the original ATARI BASIC. If you find something in ATARI BASIC you don't like, "That is obviously a part that someone else specified," says Bill.

Of course, ATARI BASIC was five years ago, and O.S.S. hasn't been sitting still since then. The company created



some of the best tools available for beginning and experienced programmers alike. But Bill Wilkinson and his colleagues at O.S.S. haven't forgotten the people who want to know more about how their computers work: they have written two books (*Inside Atari DOS* and *Compute! Atari's Basic Sourcebook*, both published by *Compute! Books*) which explore in machine-level detail the innermost workings of your Atari home computer.

In addition to his work at O.S.S., Bill writes a monthly column in *COMPUTE!* magazine titled "INSIGHT: ATARI." Since much of what he writes about is, indeed, "tips" of one kind or another, it seemed appropriate that ATARI CONNECTION ask him to select his favorite "Ten Tips".

In preparation for these "tips", Bill read all the copies of ATARI CONNECTION magazine. "I discovered what I believe to be a common thread in the letters and editor's columns," says Bill. "Readers of this magazine want to learn more. More about games, more about what their machine can do, and more about programming. So this will be tips about MORE."

### ***Ten Tips for the Beginning Programmer Who Wants to Do More***

**T**HESE TIPS ASSUME that you have written at least one Atari BASIC program which works. You are, presumably, wondering where you go next. Will you try to become a professional programmer? Do you want to be an expert hobbyist? What more is there to do?

I will try to give you some things to think about, some friendly advice, and some goals to achieve. I would like to thank Mike Peters, Mark Rose, Steve Lawrow, and Mike Fitch, all of our staff

here at O.S.S., for contributing to these tips with some very valid comments and suggestions.

#### **1. DESIGN A PROGRAM THAT WORKS**

WE HAVE ASSUMED THAT YOU have at least written your first program. But did you design it? Or did you simply complete an assignment or a magazine's

suggestion or what? If you didn't really design it—if it just sort of happened—then you still have a big step to take.

Think of a major programming task you would like to undertake. Try to envision the entire job. What are the inputs and outputs? How will it interact with the computer environment and with the user? How will its major task be subdivided into manageable sub-tasks?

It is not unusual for the design process to take as long or longer than the actual programming. So plan your program,

preferably on paper, before implementing it. And then implement it. Implement it well. Test it against your original goal and design. If it works and meets the goals, congratulate yourself. You are on your way.

## 2. STUDY AND UNDERSTAND SOME WELL-WRITTEN PROGRAMS

UNFORTUNATELY, THIS requirement usually cannot be met by reading program listings in magazines. Too often, a program in a magazine is intended to be illustrative of an idea or concept but not to be a real, problem-solving program. Because magazines are limited in space, even the programs which are complete in and of themselves are often too short to satisfy the requirements of this "tip."

There are exceptions to the not-from-a-magazine rule, and there are many really well-written public domain programs floating around. So seek and ye shall find. And an interesting task to give yourself is to try to improve one of these programs. You are really becoming a programmer when you can do that.

## 3. USE PLENTY OF TRIAL AND ERROR

LARGE COMPANIES EXPECT ONLY 10 to 20 lines of debugged and documented code per day per programmer. That's not because the programmers aren't good. It's because it takes a lot of work to get a polished, bug-free, usable program.

Lots of elbow grease and lots of perseverance may be necessary to get results. And never, never, never be afraid to try something. It just might work the first time. But don't be discouraged when it doesn't work the twentieth time.

## 4. PAY ATTENTION TO DETAIL

AN HOUR SPENT THINKING through the details of a subroutine's entry and exit conditions may save days when you actually start trying to code it or use it. And a program which doesn't crash when the user does something unexpected is worth its weight in gold.

## 5. READ A LOT

Read ATARI CONNECTION from cover to cover. Then go out and buy three or four other magazines and a couple of books.

There are simply too many books about the Atari computer for me to suggest only one or two, and it is certainly true that which book you should buy depends on what kind of programming you want to do. I will state, though, that I personally read virtually everything in every issue of the following magazines: *Compute!*, *Antic*, *Analog*, *Hi Res*, even *ATARI CONNECTION!* You can find these magazines at your local computer retailer, or on newsstands.

These first five suggestions have been kind of general in nature and could apply to programming of any kind on any machine. The next five tips relate directly to our experiences with computers made by Atari, Inc.

## 6. BUY A GOOD MEMORY MAP OF YOUR ATARI COMPUTER

THIS IS A MUST! OUR PERSONAL favorite for the advanced beginner, and certainly the most complete for the BASIC programmer, is "Mapping the Atari" from *COMPUTE!* Books. Beyond that, there is really only one choice: the Atari Technical Notes are the biggest bargain in town. They even include a listing of the Operating System ROMs. See Tip number 2, above.

## 7. WRITE 'LEGAL' PROGRAMS

WHEN ATARI, INC., BROUGHT out its new line of computers this year, many software companies suddenly found that their programs no longer worked properly. This was NOT Atari's fault! I have said this in print more than once before, and I am not simply giving you an official "Party Line". (In fact, several programs produced by Atari, itself, did not work at first!)

Atari has published several guidelines about what will and won't change as computers are upgraded. Be sure and use only the locations and subroutines provided by Atari which are guaranteed not to change.

I am constantly amazed at the number of programs which perform keyboard input or disk output or whatever by calling machine language routines deep in the OS ROMs. Why? Because you can save a paltry 5 to 10 bytes that way. Don't fall into that trap! Use your computer's truly superb Operating System interface, complete with IOCB's and parameters and other things which certain Fruity computers and Itsy Bitsy Machines seem never to have heard of. Atari, Inc., deserves credit for a great operating system. You deserve credit for using it properly.

## 8. BUY A DISK DRIVE

IF YOU ALREADY OWN A DISK drive, buy a printer. If you already own both a disk drive and a printer, buy another disk drive. The more disk drives you have and the more space available on each drive the better. I consider two disk drives and a printer the minimum usable configuration for serious programming work. If you can't afford this configuration, buy peripherals in the order I have suggested.

## 9. LEARN ANOTHER COMPUTER LANGUAGE

BASIC IS A GREAT LANGUAGE. I've written several BASIC interpreters and have worked on two for the Atari computers. Of course, the interpreters are written in assembly language, which I enjoy; but I still like BASIC and feel at home using it. It is so easy to use, so flexible, and so interactive.

As an Atari computer owner, you can now move beyond the simplicity of ATARI BASIC by choosing either of two available extended BASICs. And, yet, there is a limit to how far you can go with any BASIC. I hesitate to suggest what your next language should be (obviously, our company has certain prejudices). I believe that you should examine your goals in programming.

If you intend to do business or data base programming, PASCAL or C might be good choices (though an extended BASIC does surprisingly well here). If you wish to write arcade games, FORTH and ACTION and assembly language (in increasing order of speed) seem to be the only choices when using an Atari computer. Educational applications are easier when using PILOT or Logo. How can you choose? This short article can't tell you, but it can remind you of Tip number 5.

## 10. USE GOOD TOOLS

ACTUALLY, THIS IS A little redundant. In part, Tips 8 and 9 are also saying the same thing. Good hardware and good languages are important parts of a set of good tools. But don't stop there.

Modesty prevents me from mentioning some of the better tools you can use (and APX gets enough publicity, also), so I will not belabor this point. When you need to accomplish a programming task, don't reinvent the wheel. See if you can buy what you need. Only then, if you really need to, should you write your own tool. And, if it's good enough, sell it or publish it. Who knows, maybe you can end up writing your own Ten Tips!



# PRODUCTS

## REVIEW

### *New Products for Atari Home Computers*

#### **THE ATARI 600XL: A SLEEK NEW MACHINE**

*16K, Expandable to 64K,  
with Built-in BASIC*

**T**he new Atari 600XL computer is here! I tested one, hot off the production line, and it performs up to its sleek styling.

The Atari 600XL is weighted and fitted with nonslip foot pads that give it a solid, comfortable feel. I've worked with other computers in the same price range. They all feel and look like cheap plastic toys that slip around on my work surface. Not the Atari 600XL. It stays put and looks professional. And, the full-size keyboard is a writer's dream come true. Extra-wide keys with slight fingertip depressions and good response let me type with confidence.

The keyboard layout has been carefully human-engineered. Atari engineers have moved the inverse character button off to the side and out of range of

touch-typers who are used to a conventional typewriter keyboard.

A strip of flush-mounted special control buttons line the right side of the computer. In addition to the RESET, OPTION, SELECT, START buttons, a new button labeled "HELP" has been added.

#### **HELP is Here!**

By pressing the [OPTION] and [HELP] buttons during power-up, or typing "BYE" while using BASIC, the Atari 600XL goes into SELF TEST mode. In the SELF TEST mode, a menu appears that lets you test the computer's Read-Only Memory (ROM), Audio-Visual capabilities, or the Keyboard. The Owner's Guide recommends that you run through all of these tests when you first get your computer home, or if you're having any problems.

#### **Built-in BASIC**

A new and improved version of ATARI BASIC is built into the Atari 600XL. This new BASIC, called

"Version B," handles exponents the way they're supposed to be handled. In the older version, 3 cubed, for example, gave an answer of 8.999999. Version B rounds this off to a solid "9." Also, in the older version of ATARI BASIC, the computer would "go to sleep" (lock up) if you typed in: PRINT A=NOT B. No more. Your new Atari 600XL will not go to sleep on the job!

#### **International Character Set**

Want to send a letter to a friend in a foreign country? Want to write in a language that uses special accent marks, cedillas, tildes, diaereses or other diacritical marks? If you do, the Atari 600XL is the right choice for you. An international character set is built into ROM and can be called up using a simple POKE (POKE 756,204). Now, your draft can be printed out, accents and all, on an Atari printer.

#### **Four New Graphic Modes**

The Atari 600XL's Operating System has been enhanced to allow BASIC to



Atari 600XL. Built-in BASIC and new parallel interface port on back.

call up four graphics modes that weren't available on the Atari 400 or 800 computers. In BASIC, these are graphics modes 12 through 15.

Graphics Modes 12 and 13 are both 4-color character modes that let you display four colors in one "character." These modes are excellent for animation or background patterns that use a redefined character set.

Graphics Mode 14 offers high resolution (160 X 192) with two colors, and Graphics Mode 15 presents a high-resolution screen (160 X 192) with four colors.

### Expanding Your Atari 600XL

A parallel bus connector is located on the rear of the computer. Primarily, the parallel bus accepts a Memory Module 1064 that transforms the Atari 600XL into a 64K RAM computer. I spoke to the Atari hardware engineers, and this is what I learned.

The Memory Module will include a parallel connector that can be used to drive a number of third-party peripherals compatible with Atari computers—disk drives, printers, or modems. But, a word of caution. I was told that the parallel bus is not buffered. This means that the computer is not protected in the event that one of these peripherals has an electrical or software problem. So before you start plugging in exotic equipment, other than the Memory Module, into the parallel bus, make sure you contact the manufacturer or Atari Customer Service. If you don't, you may damage your computer, or that new special peripheral.

### The Owner's Guide

As an experienced Atari computer user, I had no problem with the Owner's Guide. However, new owners might. For the most part, the guide is well written and amply illustrated. But, a few basic omissions leave the new owner in the dark.

Although two pages are used to show how to install the TV switchbox on your television set, the guide doesn't tell or show you:

- Where or how to plug the unit into the computer
- Where to plug in the power supply unit
- How to connect peripherals to the computer

### One Great Piece of Hardware

You've got to get your hands on a 600XL to fully appreciate the sophistication of this computer. For the price (suggested retail: \$199.00), I think it's the best home computer buy on the market today. —Dave Heller



## TOUCH TABLET WITH ATARIARTIST

*Leonardo da Vinci, Step Aside*

The Touch Tablet is a computer canvas, a work of art waiting to be made. It comes with a special stylus, though you can use just about anything in its place—one of your own pens, or even your fingertip. But the brains of the operation lie in Touch Tablet's companion software, the palette—the AtariArtist cartridge.

With AtariArtist, anyone can easily create abstract art, poetic pictures or geometric graphics. All you need is a little imagination. AtariArtist supplies the rest. It combines the features of conventional painting, drawing or erasing, giving you a wide choice of painting tools: eight brush widths and styles, 128 colors, and 12 pre-designed patterns in the same 128 colors.

Doodle, write your name, or draw a flourishing flower arrangement in the Draw mode. If you want to dabble in a bit of calligraphy, select a wide brush and write away. If you want to draw a straight line, do it in the Line mode, and use the K-Line mode to quickly connect lines. Add a thrust of fan-like bursts in the Ray mode.

I enjoy using Fill for a coloring book effect which allows you to color in any part of what you've drawn already on the screen. A cursor displaying the word Fill shows you exactly what you're coloring. But if you want pre-filled geometric shapes, use the Box or Disc modes. If you don't want them colored in, select Frame or Circle. If you've drawn something and just don't like it, simply get rid of it with Erase.

AtariArtist is also capable of enlarging the screen area around your stylus to eight times its normal size in the Magnify mode. I found this feature handy

when doing detailed work. Let's say, for example, you've drawn a multicolored brick house, but one brick is a bit too long. By selecting Point, which allows you to work with each point, or pixel, on the canvas, and selecting Magnify, you can easily correct the problem. Another fun feature is Mirror. Mirror allows you to duplicate shapes, horizontally, vertically, diagonally—one direction at a time or all at the same time.

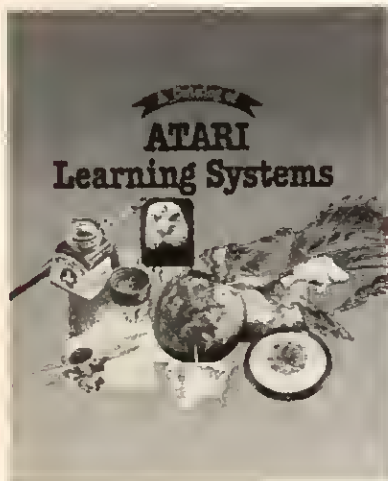


What I like most about AtariArtist is the Color Menu. The palette converts into a variegated canvas filled with a selection of 128 colors. Here you can change any color on your drawing or vary the brightness of your display. Change colors or patterns, change patterns to solids, even add a pulsating rainbow that continuously changes colors.

Although your creation is only visible on your television monitor and cannot be printed out or transferred to another program you may be working on, your work of art is not lost forever when you turn off your computer. By using the Storage mode, you can save your masterpiece on diskette or cassette. Invite your friends over and show them that you and Leonardo may have a few things in common. —Patti Donovan

AtariArtist is available on cartridge. Touch Tablet requires a minimum of 16K RAM. To save your program, you need a program recorder or disk drive. Disk drive requires 24K RAM and DOS 2. Suggested retail price: \$79.95.





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W-ALS

## ATARI ALL-IN-ONE PAK

*One-Stop Shopping Comes  
 to the Computer Marketplace*

**G**ood news for first-time computer buyers: Now you can get everything you need for programming, word processing or entertainment in one package. All-In-One Paks from Atari come complete with an Atari 600XL Computer, peripherals, software, and valuable how-to books.

The Programming System All-In-One Pak gets computer pre-literate of all ages started in the art of computer programming. In addition to the computer itself, you get an Atari 1010 program recorder, five program cassettes, and two introductory instruction books: *Inside ATARI BASIC* and *101 Programming Tips & Tricks*. The latter provides simple programs, both in listings and in ready-to-run cassette form, which show you how to start writing your own programs. And the five program cassettes and two workbooks in *An Invitation to Programming* offer step-by-step, hands-on training in "Fundamentals of Programming," "Writing Programs (levels One and Two)," and "Sound and Graphics." The tapes take advantage of the Atari 1010 program recorder's stereo capability by using two tracks—one for the actual computer programs, and another for instructive voice prompts.

Those who just want to take advantage of the power of the computer without necessarily understanding how it works can jump right into word processing with *The Writing System All-In-One Pak*. Students, writers and business

people can get their hands on a powerful word processing system without scouring the stores for the best deal on computers, printers and software. The Writing System combines the Atari 600XL computer, AtariWriter program cartridge, Atari 1027 letter quality printer, and a writing guide, all for the price of a good typewriter. (See Len Lyons' story, "The Professional AtariWriter," page 31.)

And, for game enthusiasts who want to move up to the power and versatility of a home computer, there's *The Entertainment System All-In-One Pak*. You get the enhanced sound and graphic capabilities of an Atari computer, two joysticks, a new book on how to win at Atari home computer games, and two of the most popular games around—MS. PAC-MAN and DONKEY KONG.

—Paul Cohen

All-In-One Paks now available. The Programming System includes: Atari 600XL computer, Atari 1010 program recorder, five *An Invitation to Programming* program cassettes, 101 *Programming Tips and Tricks* with companion program cassette, and *Inside ATARI BASIC*. Suggested retail price: \$379.95.

The Writing System includes: Atari 600XL computer, AtariWriter word processing program, Atari 1027 letter quality printer, stationery, and *One Way to Better Writing* book. Suggested retail price: \$599.95.

The Entertainment System includes: Atari 600XL computer, two joysticks, game cartridge storage case, MS. PAC-MAN and DONKEY KONG game cartridges, and *Inside Secrets* book. Suggested retail price: \$299.95.



The Writing System All-In-One Pak

## NOTHING LOST IN TRANSLATION

### Translator Disk for Atari XL

**T**he Atari Translator is now available for new Atari XL computer owners who want to take advantage of all the programs written for the Atari 800 computer. As with any computer system-update, the software library created for the first generation of Atari computers is not 100-percent compatible with the Atari XL series. (See Tip Number Seven in Bill Wilkinson's "Ten Tips for Programmers," page 62.)

But the Translator solves the problem. There are two sides to the disk—side one will make roughly 95 percent of the Atari 800 programs compatible with your Atari XL computer, and the second side the rest. To use the Translator, follow the power-up sequence as described in the owner's manual of your computer and system peripherals. You then insert the Translator disk into the disk drive, and switch on your computer. The Translator will load a new Operating System into your Atari XL computer. The screen will now prompt you to remove the Translator disk and insert the program disk you want to use. After closing the door to the disk drive, press [SELECT]. The computer will act as though it were an Atari 800 that had just been powered up. Turning off the power will erase the new Operating System from your Atari XL's memory and restore the computer's normal operations. With the Translator, you've got easy access to the best of both worlds.

— Bill Bartlett

The Translator is available in diskette format. Requires 64K RAM. Suggested retail price: \$10.

## SPIDER PAK

### Multi-Function Power Adaptor

**I**f your computer setup's anything like mine, you've got everything arranged just so. Unfortunately, the one part of the Atari computer system that stumps me is the power supply—those ubiquitous black lumps with their auto-tangling cables that seem designed

to defy anyone's attempts to tidy them up, and proliferate with the eagerness of well-fed little electro-bunnies as I add peripherals to my system. I've seen power supplies taped to hacks of computer tables, and scattered around on the floor, lined up carefully alongside a power strip, lurking behind various system components. I've always suspected that there must be a better way.

Enter Compu-Tech Spider Pac. David Brundage, the founder of Compu-Tech, designed this heavy-duty little two-pound marvel to do several things, all very important for filling your computer system's thirst for power. First, it provides the same nine-volt AC power step-down as all those black boxes. But instead of four or five of those nasty critters, the Spider Pac has a row of five outlets on one side, where you plug in the five cables—included in the package—that connect to a disk drive, the computer, the interface box, a modem, and other peripherals.

Second, it replaces a power outlet strip with three 120-volt AC outlets along the opposite side. These are convenient places to plug in your monitor, your printer, perhaps even a couple of those little black boxes if the five nine-volt outlets aren't sufficient enough to power your system. Finally, it provides line-filtering and surge protection to help save your valuable data from disastrous glitches.

I might add here, that the power cords will only work with the Atari 400 and 800 home computers. The new Atari XL computers use a different power jack, however, Spider Pac can still provide power for many of the Atari XL system peripherals. But you should make a "system check" before you decide on Spider Pac.

One minor drawback of the Spider Pac is that it will only power one disk

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drive—cost considerations made it prohibitive to add a larger transformer. Nevertheless, the Spider Pac provides the solution to several problems in one neat, high-tech package. —Jim Inscore

Spider Pac is available from Compu-Tech, Department B, P.O. Box 5058, Glendale, Arizona 85306. Introductory price: \$134.95.



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# SOFTWARE

## R E V I E W

*New & notable programs for your Home Computer*

### EXCALIBUR

*At Last—The Thinking Player's Computer Game*



So you've had a hard day at work. Kick off your shoes, sir back in that favorite easy chair, uncork a bottle of chilled white wine, take the phone off the hook and slip *Excalibur* into your disk drive. You are about to embark on a several-hour journey into the realm of King Arthur and his noble knights.

Turn on your computer, and the first image appears on the screen. You find yourself in front of a broad lake surrounded by hills and forest. Strains from a Wagnerian opera pervade the atmosphere. A blade of steel slowly emerges from the opaque sea of blue. It is propelled by a hand from an unseen body that clutches the sword at its scabbard. *Excalibur!*

The scene changes and you are inside the castle at Camelot. Knights, represented by their crested shields, gather around an oval table. Notice where the knights are standing. Some cluster together; others move apart. Their spatial positions in the room indicate their social relationships. Each character's personality is as distinctive as the symbol on his shield. One is valiant in battle, but inexperienced and headstrong. Another fancies a potentially disruptive dalliance with Queen Guinevere. This man must be banished before a realm-rendering tryst can develop. Even the bravest of these knights, when cornered or overpowered in combat, might turn and flee, leaving his comrades to their own fates.

The theme of *Excalibur* is leadership.

*Markene Kruse-Smith, a romantic adventuress of the Middle Ages, is visiting the computer era in her role as Editorial Supervisor in the Creative Services Department of Atari Products Company.*



You, the player, are King Arthur, and your goal is to reunite a medieval Britain torn by strife among feuding kings. To do this, you must rule Camelot with wisdom and justice. At the same time, you must make alliances, do battle when necessary, and keep a close watch on activities transpiring throughout the land.

Using a joystick, and aided by a series of pictorial menus, you can travel

throughout Britain, collect taxes and tithes, engage in espionage, and reward, honor or banish your knights. It is essential to maintain their loyalty and provide for the economy while you build your army. Pay tribute to any of fifteen other British kings, ignore them (until one attacks) or accept them as vassals. Like the knights, each king has his own personality, and his perception of you is based on a complex set of fac-

tors, including the state of his own kingdom and your relationships with his friends and enemies among the other kings.

One's natural impulse is to begin game play by immediately raising taxes, encumbering the peasants, recruiting a large army and storming off to war. But those who attempt such Machiavellian tactics face almost certain defeat in battle, and forfeiture of the game. If you challenge opponents at random, you might attack a friendly king, or one whose army outnumbered yours. Any act of wanton avarice or unthinking brutality can turn all of the warring kings against you.

If this doesn't sound like what you've come to expect from your typical, blip-blip-zap-the-monsters video game, it's because *Excalibur* is not an ordinary computer game. It is an engrossing adventure-fantasy, programmed with remarkable subtlety and depth. Atari game designer Chris Crawford and his imaginative collaborators, Valerie Atkinson and Larry Summers, create a real world for *Excalibur*—a world teeming with adventure, fraught with danger, and filled with characters who behave like real people. Here, at last, is a program for the discriminating computer-game player.

Crawford makes artful use of the Arthurian legends to address the social, political and interpersonal aspects of decision making. The focus is not on hattle maneuvers, but the ability to rule, and the cohesion or disintegration that can occur in a society as a result of a leader's actions. In fact, the game could be construed as an elaborate metaphor for corporate politics.

Of course, wise Merlin—whose on-screen likeness bears an uncanny resemblance to that of real-life designer Crawford—is available to apprise you of your enemies' strengths and weaknesses, and to rain plague and pestilence upon marauding armies and their lands. What those who do battle on the corporate front wouldn't give to have this friendly wizard on their side!

The designers of *Excalibur* show off the Atari computer's sound and picture capabilities with software that presents illustrated menus, sophisticated animation, lavish color and intriguing musical effects to support their fantasy.

A particularly appealing visual element is a gigantic scrolling map of Britain. Players can sojourn throughout a colorful kingdom filled with castles, bordered territories and green farmland. Chris Crawford introduced the scrolling screen device in two previous computer games — *Eastern Front* (1941) and *Legionnaire* — and *Excalibur*'s map of

Britain features a number of dazzling new embellishments.

The game's instruction manual breaks a cardinal rule in video game design: Players shouldn't have to wade through a lengthy manual in order to understand a game. Well, Crawford and his cohorts have written an 100-page novella to document *Excalibur*. It is necessary to read the book to catch all the nuances and win the game. But fear not—it's an intriguing story, not a technical tome. Besides being entertaining reading, the manual will get you in the mood to play the game. It may also send you to your bookshelf in search of a dusty copy of Thomas Malory's *Le Morte d'Arthur*, or other traditional sources of Arthurian lore.

You won't find Sir Nosnikta any place else, for example. Here, game program-



Wealth	40	20
Taxes	10	10
Army	7	6
Tithes	0	0

mer Valerie Atkinson has left her mark. A clue to her presence, and that of Larry Summers, is to be found in the novella, where Sir Drowarc is described as possessing the ability to speak exactly backward. Yes, he is Chris Crawford. And Summers is Sir Sremmus, who, in the novella, has an affair with Queen Guinevere. A little healthy egotism on the part of its creators never hurt a work of art, but Guinevere's affair is an unsettling departure from traditional tellings of the legend!

Through the centuries, each generation has recreated the Arthurian world in countless works of fiction, poetry and drama. From early renditions of the ancient Celtic myths, to the Camelot Broadway musical and the *Excalibur* movie, the adulterous love between Arthur's knight Sir Lancelot and his queen Guinevere is a major theme. Unfortunately, their star-crossed love affair doesn't enter into the computer game *Excalibur*.

Speaking of romance and the fair sex, what in the name of Christianity have *Excalibur*'s programmers done with the legend's cast of female characters? Where, for instance, is Arthur's scheming half-sister, Morgan Le Fey? (At least they've retained treacherous Sir

Mordred as an element of evil.) How about Lady Nyneve, who was strangely abducted during the wedding of Arthur and Guinevere and who became the subject of Sir Pellinore's quest, and the object of Merlin's unrequited love? And where, in this version of *Excalibur*, is that beguiling damsel who gave King Arthur the famous sword for which this game is named—the mysterious Lady of the Lake? Alas, Queen Guinevere is the only woman in the game.

We visited Chris Crawford in his offices at Atari in order to harangue him about these pressing issues. Crawford explained that there aren't enough RAMs (bytes of random access memory) in any computer to retain all the subplots of the Arthurian legend, while maintaining the game's sound and visual effects. Foiled by a mere technicality!

Since computer games are only beginning to come into their own as an exciting, new interactive art form, and the game is positively enthralling, we may let the *Excalibur* designers off the hook for their oversights concerning courtly love, chivalry and the romance between Lancelot and Guinevere. It's too bad about the RAMs, though, because they also left out the Holy Grail.

All-in-all, *Excalibur*'s authors succeed brilliantly in their attempt to transform the adventures of King Arthur and his knights of the Round Table into an engrossing, participatory experience. Ten years ago, the possibility that we might use computers for recreation at home existed only in science fiction. Today, thanks to pioneering computer game artists like Crawford, Summers and Atkinson, we can explore a program's thematic structure, analyze its character development, and critique the sound and graphics.

*Excalibur* was accomplished on a programming scale that's unparalleled in computer game design. The artificial intelligence for this game is immense, and play demands a great deal of sophistication from the audience. It also demands a certain amount of patience. Because the program is so huge, there are some long pauses involved during loading and when going from one menu or scene to the next. Games can be saved and played during the course of many hours or days. Like a really good novel, *Excalibur* is an experience to be savoured. —Markene Kruse-Smith

*Excalibur* is available now from Atari Program Exchange (APX). Diskette requires 48K RAM and joystick. Suggested retail price: \$29.95.



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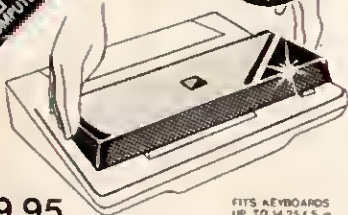
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## CHANGING FONTS

### AtariWriter Printer Drivers

In the past, most word processing programs limited your options by providing for only certain print styles, even if your printer supported additional fonts. If you owned an Epson printer and wanted to print in italics, you had to imbed a "Control D" command in the text, followed by the appropriate number—which usually had to be converted from ASCII code to decimal form. So much for the ease and convenience of word processing!

But now Atari Program Exchange (APX) has introduced a program that lets you print documents created with AtariWriter using any typeface on any one of a dozen different printers. The AtariWriter Printer Drivers program handles those cumbersome, time-consuming conversions for you. You can use the same formatting commands that drive an Atari 825 printer to operate the Atari 1020 and 1027 printers, several models of the Epson MX-80 and MX-100 printers, as well as printers by Gemini, NEC, and ProWriter.

All you do is load the AtariWriter Printer Drivers diskette into your computer's memory, with the AtariWriter cartridge installed. Place your text diskette in the disk drive and SAVE the printer driver program onto your text diskette, with the file name AUTORUN.SYS. The printer-driver operating system is now stored on the same disk as your text file, and can be called on when you print a file from that disk. Just return to the format line, enter the appropriate codes, and watch your printer crank it out—boldface, italic, condensed italic, double columns, superscript and subscript. You're limited only by the capabilities of your printer.—Cassie Stahl

AtariWriter Printer Drivers is now available on diskette from Atari Program Exchange (APX). Requires 24K RAM; disk drive; AtariWriter cartridge. Suggested retail price: \$24.95.

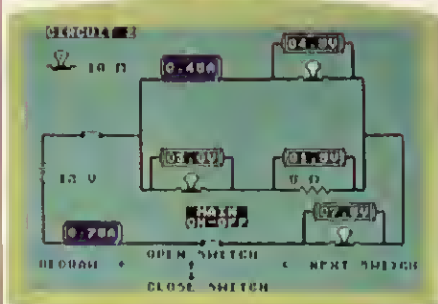
## CIRCUIT LAB

### Another Bright Idea from APX

I was about to run the Circuit Lab program recently when, for the third time that week, the building's power went out. Sitting in the dark, temperature rising, I began to plot my revenge

on Pacific Gas & Electric. I figured with a 12-volt battery, some electrical supplies and Circuit Lab, I could at least keep the lights burning and a small fan turning. Forty minutes later, when the juice came on, I slipped Circuit Lab into the disk drive and went to work.

Circuit Lab is an introductory course in direct current electronics, showing the relationships between voltage, resistance and current. Designed by a high school physics teacher and distributed by Atari Program Exchange (APX), it's an ideal tutorial for students, hobbyists, or urban survivalists bent on energy independence. The program allows you to design any one of four different circuit types—series, parallel, and combinations of the two. You can build a circuit with lights, switches, resistors, ammeters, voltmeters and batteries, using the joystick to position the various components within the circuit.



It's possible to select individual resistance values for the light bulbs and resistors, and select the voltage of your battery. Switch on the circuit, again with the joystick, and the lights come on. It's almost as satisfying as the real thing! When the circuit is activated, you can also read the meter values which indicate resistance, current and voltage throughout the circuit.

What's nice about computer-assisted circuit design is how easy—and safe—it is to experiment with. You can alter your scheme at any point without tearing out wiring (or your hair), and know if it's going to work. If you've created a short circuit, the program lets you know. No more dangerous trial and error!

The manual follows the screen graphics closely. It gives a good beginner's introduction to direct current circuit theory, covering Ohm's Law (current = volts ÷ resistance in ohms) and Kirchhoff's Laws (in series, various branches of the circuit share current and split voltage; in parallel circuits, branches share voltage and split current). The program comes with applications, exercises and examples for each case. Circuit Lab does have some limitations. I

would like to see the addition of more components (diodes and transistors, perhaps), and some more complicated circuit layouts. Also, it would be nice to be able to print out your designs, or save them to disk.

But this is a good beginner's guide with catchy graphic and sound elements, well-presented concepts, and useful exercises. It'll start you out with sound electrical theory, so that the next time the lights go out, you may not be totally in the dark. —Bruce Parker

Circuit Lab is available from Atari Program Exchange (APX) in cassette and diskette format. Requires 32K RAM, ATARI BASIC language cartridge, and joystick. Suggested retail price: \$24.95.

## SPELLING CHECKER FOR ATARIWRITER

*A Dictionary on a Disk*

It's easy to see why word processing is one of the most valued and popular uses of home computers. Freed of the mechanical drudgery of revising and correcting text, you can concentrate on the creative process itself. Once you get the word processing "habit," it becomes almost impossible to go back to a typewriter.

But one nagging chore remains, even with word processing—checking grammar, spelling and typos. While programs to check grammar are not yet available for most personal computers (copy editors of the world, take heart), there is a variety of spelling dictionaries on the market. A spelling program will scan your document and mark words not contained in the dictionary. You can then check for misspellings and enter corrections in your text easily.

*Atspell* for AtariWriter is a new spelling dictionary from the Atari Program Exchange (APX). Designed to work with the AtariWriter word processing program, *Atspell* lets you use the spelling and the writing programs at the same time—an innovative feature. Most dictionaries have to be loaded into computer memory after you've written or edited a document, which then has to be reloaded and checked against the spelling program. *Atspell* streamlines this process by allowing the spelling program and the word processing program to coexist in the computer's memory.

*Atspell* is as easy to use as this:

- Load the *Atspell* for AtariWriter program disk, with AtariWriter in the cartridge slot.
- When the AtariWriter menu appears,

create a document in the usual way. When finished with your document, return to the AtariWriter menu.

- Press CONTROL "A" for the *Atspell* menu.

- Press "C" to correct spelling errors. Insert the *Atspell* Dictionary Disk. Your document appears with all words not listed among the dictionary's 30,000 entries highlighted in inverse video. The program stops at each highlighted word and asks you to correct the word, accept the word, or consult the dictionary. To look up a word in the dictionary, give as many of the letters as you're sure of. *Atspell* displays all the words that begin with those letters, nine words at a time, at the top of the screen. Enter the correct spelling, press [RETURN], and the program goes on to the next highlighted word. When the entire document has been checked, *Atspell* gives you a total word count—a handy feature if you're writing an article or report to a specified length.

Once you become familiar with *Atspell*, proofing a five-page, 1,500 word report shouldn't take more than about 15 minutes. Not bad, considering the peace of mind you get, knowing there are no embarrassing mistakes in your written work.

You can supplement the basic *Atspell* dictionary with as many personal dictionaries as you like. You may want to create a medical, legal, or computer dictionary. The personal dictionary is stored on a separate text disk and checked much faster, so it's good practice to build a number of personal dictionaries. But even *Atspell*'s relatively slow speed can be a plus, allowing you to proofread your document as its words are being checked.

*Atspell* is a very useful and well designed program. But as its author, R. Stanley Kister, says in the program manual, "you can't get something for nothing." In order to have *Atspell* operate at the same time as AtariWriter, you lose half the memory available for creating a document. Using a 48K system with AtariWriter, you normally have 20K of RAM left for your document. With *Atspell* loaded in, there are about 10K of RAM left. Of course, AtariWriter allows the creation of documents much larger than available memory with use of the CHAIN command.

The program's limitations pale beside its benefits. *Atspell*'s ease of use, compatibility with AtariWriter, and its highly readable displays make it an almost irresistible necessity for AtariWriter users. —Jason Gervich

*Atspell* for AtariWriter is available on

# Debug Your Atari Humbugs

## Give Atari

**ATARI BASIC Faster and Better** by Carl Evans. Programming tricks and techniques. Three companion software diskettes available (sold separately). 300 pages. ISBN 0-936200-29-4 \$29.95 retail.

**ABFAB Assembly Disk.** Companion software to ATARI BASIC Faster and Better. Ten assembly language source programs and ten object programs. ISBN 0-936200-300-8, Disk \$24.95 retail.

**ABFAB Library Disk.** Two disks full of subroutines that can be included in your BASIC programs. Includes BASIC and machine language (some programs POKED into memory). ISBN 0-936200-31-6, Disk \$24.95 retail.

**ABFAB Demo/Applications Disk.** Eleven application programs and fourteen demonstration programs from the ATARI BASIC Faster and Better book. ISBN 0-936200-32-4, Disk \$24.95 retail.

IJG Products are sold at computer dealers and booksellers worldwide. If your dealer is out of stock, order direct. Include \$4.00 for shipping and handling. Foreign residents include \$11.00 in U.S. funds for shipping and handling. IJG Inc. 1953 W. 11th St., Upland, CA 91786. (714) 946-5805

**Be Thoughtful This Season**



The Thoughtware Company



diskette from Atari Program Exchange (APX). Requires a minimum 32K of RAM, AtariWriter cartridge, DOS 2. Suggested retail price: \$39.95. Available from APX December, 1983.

## ATARI DOS 3

*New Disk Operating System—  
More Data Storage  
Plus Convenience*

**T**he next step in the evolution of Atari Disk Operating Systems (DOS) has arrived. The recently released DOS 3 increases the power and efficiency of the new generation of Atari XL computer systems. The biggest advantage of DOS 3, when used with the new Atari 1050 disk drive, is "dual density" operation. This feature allows you to choose two different methods of data storage and retrieval—either the familiar single density format or the new "enhanced density" format.

A diskette formatted for single density contains 40 tracks. Each track is divided into 18 sectors of 128 bytes per sector, for a total disk storage capacity of 720 sectors. The new "enhanced density" format also uses the industry standard 40-track diskette format, but each track now contains 26 sectors of 128 bytes per sector, thus increasing the storage capacity of the diskette to 1040 sectors. Although you cannot create dual density files with an Atari 810 disk drive, you can use a dual density Atari 1050 disk drive with DOS 3 in combination with a single density Atari 810 disk drive.

Those who have become accustomed to the DOS 2 menu selections will find it necessary to learn new DOS 3 menu habits. To obtain a DOS 3 directory listing, for example, the command "F" for "File Index" is entered instead of the previous DOS 2, "A" command. Upon using the file index option you will notice that the directory no longer displays the number of free sectors at the end of the listing. The free disk space is now measured in "blocks." A block is composed of 8 sectors of 128 bytes each, thus 1 block equals 1024 or 1K bytes. This is the minimum file size for a disk file created with DOS 3.

In addition, there are several new commands in the DOS 3 menu. The new DOS 3 "X" command can be used to run user-defined machine language programs that have the file name extension ".CMD." The "X" menu option enters the file name without the extension. The file chosen will then be loaded and executed. The DOS 3 "H"

or HELP command calls up a "HELP" Menu which allows the user to obtain detailed instructions describing how to use each of the DOS 3 Menu functions. For those users who have an Atari computer from the "XL" line, these help functions may be called from the DOS 3 Menu by pressing the computer's [HELP] key. The third new option on the DOS 3 Menu is "Access DOS 2" which is represented on the DOS 3 Menu by the letter "A." This option allows the user to convert programs or files created with DOS 2 to the new DOS 3 format. This conversion is necessary because the Table of Contents and the Directory area on DOS 3 formatted diskettes are located in different sectors than they were on DOS 2 diskettes. The DOS 3 directory occupies sectors 16 to 23. Sector 24 contains the Table of Contents, and disk storage for files begins on sector 25. By placing the Table of Contents at the beginning of the diskette, DOS 3 allows more orderly storage of data. With DOS 3, you can store a long file in its natural sequential order. This improved data storage design helps minimize the movement of the disk drive's reading head when retrieving or storing data onto the diskette. The benefits are much faster data storage and retrieval with less chance for errors.

Programmers may be interested to know that the NOTE and POINT commands have been simplified in the new DOS 3. When you open a file for updating, DOS 3 automatically establishes the file's first sector as part of the pointer. You can then simply read or write to or from that file by pointing to the byte that identifies the file. Furthermore, you won't find any compatibility problems between DOS 3 and ATARI BASIC. When calling the NOTE and POINT functions from BASIC you still must specify both the sector and byte parameters, but DOS 3 uses only the sector parameter to denote how many bytes the record or location is from the beginning of the file. Since only one parameter is required to use NOTE or POINT, it is no longer necessary to use a two-dimensional array to store a file, which means more disk space is available for other program use and data storage.

Whether you are an advanced programmer or a novice, DOS 3 contains features which will make computing and programming easier. And those who own the new Atari 1050 disk drive will find the "enhanced density" storage capacity a most welcome feature.

— John Clark

*Atari DOS 3 is now available on diskette. Requires a minimum of 16K RAM. Sug-*

*gested retail price: \$29.95. If you've purchased an Atari 1050 disk drive with DOS 2, you may be eligible for free DOS 3 software. Call Atari Customer Service at (800) 538-8543, or in California (800) 672-1404.*

## DEEP BLUE C

*Take the Plunge!*

**R**eady to move beyond BASIC but scared to jump into something as confusing as Assembly language? Don't despair. The Deep Blue C Compiler is here—another new language for your Atari computer available through the Atari Program Exchange (APX).

C was originally developed by system engineers as a programming language that offered the speed of Assembly language and the simplicity of BASIC. C's speed and efficiency has made it the language of choice in technical and academic circles. A program written in C is slower running than assembly, but easier to understand and debug. It is also very "portable"—unlike most assembly languages, any program written in C can be easily translated to work on other computers.

The Deep Blue C Compiler, used in conjunction with a text editor, allows you to program in C on your Atari computer. C's fast search capabilities will be a plus for anyone using a computer for data management and other time-consuming chores.

Here's what you'd do to turn a C program on paper into an executable machine language file on your computer:

- First, load your C text editor and type in your C program. This creates an Atari ASCII listing of your program, called a source file—the starting data from which final code is derived.

- Next, load the Deep Blue C Compiler. It will prompt you for the name of the source file you want compiled. Once you reply, the C Compiler will pull your source code off the disk, convert it to an object file—a set of instructions that can be executed by your computer—and send it back to the disk.

- The final step is to load a program from the C disk called the Linker. This program provides subroutines that are vital to the operation of the object file. Once the Linker is through, it writes an executable file to your disk. Your program will now run.

The library of commands available



with the *Deep Blue C Compiler* offers more flexibility than BASIC. For example, it has twice as many Input/Output commands. This means you gain some I/O operations not easily performed in BASIC, like special put/get functions designed specifically to go to the screen. Other commands not found in BASIC include "toupper(c)" and "tolower(c)," which will return the uppercase or lowercase counterpart of the letter "C." Two joystick commands called "vstick(n)" and "hstick(n)" return only -1, 0, or +1 depending upon the direction the joystick is being pushed.

Finally, C has made life easier for player/missile graphics programmers. BASIC uses PEEK and POKE statements, making debugging very difficult and time consuming. In C, there are 14 player/missile commands not found in BASIC, offering a wider range of programming options.

There is, however, one major limitation of *Deep Blue C Compiler*: it does not support floating point data—fractional numbers. This means any functions or arithmetic operations that include or return a fractional value will not work. You can get around this problem by computing all values with a higher power of ten. For example, to add \$9.98 and \$4.49, multiply the two numbers by 100 and then add 998 to 449. But, obviously this adjustment requires more programming, and is time consuming.

Fortunately, APX also offers a special enhancement program called *Mathlib* for *Deep Blue C*. It provides you with 32 new math functions for your *Deep Blue C Compiler*, which include:

- Atari ASCII (ATASCII) to floating point and floating point to ATASCII conversions.
- Standard trigonometric functions in either radians or degrees.
- Natural and base 10 logarithms and exponentiation.

Although this is not a program designed to teach C to the uninitiated, those of you still learning the language will appreciate the compiler's companion diskette which demonstrates C's power in graphics programming.

—Kent Smith and Jon Bernal

*Deep Blue C Compiler* is now available on diskette from Atari Program Exchange (APX). Requires 48K RAM and a text editor that does not require line numbering (such as the Atari Program-Text Editor). Optional: the Atari Macro Assembler. Suggested retail price: \$39.95. *Mathlib* for *Deep Blue C* is available from APX on diskette. Requires 48K RAM; *Deep Blue C Compiler*. Suggested retail price: \$17.95.

## JOUST

### *A Good Knight in Birdland*

When playing *Joust*, the last thing you want to do is bury your head in the sand! As a knight riding a flying ostrich, fighting off hordes of buzzard-mounted knaves and other evil creatures, that much should be obvious.

The scene opens with a vista of rocky ledges. Each screen or "wave" starts when you and your enemies materialize from gray spots on the cliffs. Your opponents take many forms—three classes of buzzard-riders (bounders, hunters and shadow lords), each nastier than the other. Not to mention the dreaded Pterodactyl and the obnoxious Lava Troll. Use your joystick to move your Knight off his ledge, and you become fair game for all these antagonists.



As you may have guessed, you must battle the enemy in head-to-head jousts. The winner of the joust is the knight whose mount is highest at the moment of contact. If you win the joust, the enemy knight falls from his mount, and his buzzard lays an egg. If, on the other hand, you lose the joust, your bird flees the scene and you lose a life. (Fortunately, you get five lives, and for every 20,000 points scored in battle, you win another incarnation. Don't squander your lives—you'll need all you can get.) Your mission is to dismount the enemy knights and to collect all the enemy eggs before they hatch.

Each succeeding "wave" becomes more difficult—you face increasing numbers of ever more wily enemy knights. On top of that, you have to contend with the Pterodactyl, who appears out of nowhere, flies fast, and is very deadly. To defeat this demon, you must place your lance on his mouth and score a direct hit. The Lava Troll poses another problem. If you fly too close to the lava pits at the bottom of the screen, the troll will try to grab you. If he succeeds in pulling you down, it will cost you a life. But *Joust* is a generous game—you not only score points for

# Debug Your Atari Humbugs

## Give Atari Utilities

**CASDIS™** Upload Utility. To transfer most BOOT tapes and cassette data files to disk. ISBN 0-936200-18-9. Disk \$24.95 retail.

**FULMAP™** BASIC Cross Reference Utilities. VMAP: variable cross reference; CMAP: constant cross reference (includes indirect address references); LMAP: line number cross reference; FMAP: all of the above. Will list 'unlistable' programs. Also works with Editor/Assembler cartridge to allow editing of string packed machine language subroutines. ISBN 0-936200-19-7. Cassette or Disk \$39.95 retail.

**DIBASH™** To disassemble machine language programs. Works with or without Editor/Assembler cartridge. May be used to up or down load single boot files. All output can be dumped to printer. ISBN 9-936200-20-0. Cassette or Disk \$24.95 retail.

**DISDUP™** For disk sector copying of unprotected disks. May specify single sector, range of sectors, or all. Copies may be made without read verify. ISBN 0-936200-21-9. Disk \$24.95 retail.

**DISKPAK™** A program that frees the unused sectors on a boot disk for storage of normal DOS files without disturbing the boot file. May be used on all kinds of boot files including multi-stage files. ISBN 0-936200-25-1. Disk \$24.95 retail.

**DOWNLD™** Diskette Download Utility. Allows BOOT files and Binary DOS files to be transferred from disk to cassette. Fast, easy, menu driven. NOT FOR PROTECTED SOFTWARE. ISBN 0-936200-23-5. Disk \$24.95 retail.

**V-COS™** Cassette Operating Utility. Control baud rate, leader time, screen width, background and letter color, cassette motor (on/off); provides cassette file verification. Cassette \$24.95 retail.

**Power Screen™**. Display List Editor/Assembler for the Antic display format processor which makes screen graphics simple and fun. ISBN 0-936200-54-5. Disk or Cassette \$24.95 retail.

**Micro-Map™**. Scrolling map utility and character generator for creating arcade-type graphics. Allows you to create characters and screens or to save and modify the characters from existing game software. Simple commands and joystick input. ISBN 0-936200-55-3. Disk \$24.95 retail.

WJG Products are sold at computer dealers and booksellers worldwide. If your dealer is out of stock, order direct. Include \$4.00 for shipping and handling. Foreign residents include \$11.00 in U.S. funds for shipping and handling. WJG Inc. 1953 W. 11th St., Upland, CA 91786. (714) 946-5805

Be Thoughtful  
This Season



The Thoughtware Company.



doing in your opponents, you even score fifty points for dying!

*Joust* is a true action game with great graphics and sound. You can select a one- or two-player game and one of four levels of difficulty. Once you have had a chance to dismount a few enemy knights you'll become bolder and bolder. Just be careful . . . or you may find yourself and your ostrich in the pits!

—Margaret Harrison

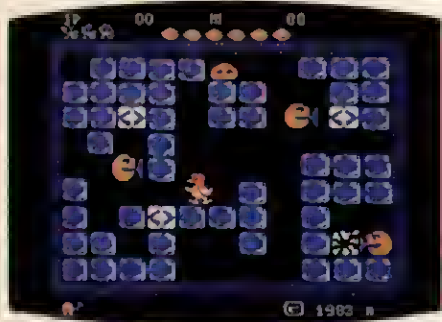
*Joust* is available in cartridge format for Atari home computers. Requires 16K RAM; joystick. Suggested retail price: \$49.95. Also available for Atari 5200 Super System. Suggested retail price: \$24.95.

## PENGO vs. the SNO-BEES

### An Antarctic Adventure

Welcome to the South Pole, home of *PENGO* and his enemies, the killer Sno-Bees. *PENGO*, adapted from the arcade game by SEGA, requires a sharp eye, sharper reflexes, and, most important, a warm spot in your heart for that truly loveable bird, the penguin.

In this chilling suspense game, you help *PENGO* win his battle over the



Sno-Bees. You can choose the beginner, intermediate, or advanced level, but unless you're a joystick champion, I suggest you start at the beginner level. This is no easy game.

At the beginning of each round, *PENGO* stands in the middle of a field of ice blocks. He must clear the screen of Sno-Bees before they put him out of commission. As the Sno-Bees gain on him, he must carve out escape routes for himself, a task he performs by crumbling and moving ice blocks.

Each time *PENGO* clears a screen, he enters a more difficult round and must fight a smarter group of Sno-Bees. *PENGO* has three to five lives, depending on the difficulty level. He squares off with six to 12 Sno-Bees, depending on the round.

What makes *PENGO* a tricky game is that he can bump off Sno-Bees in more ways than you have either hands or joysticks: He can smash them with ice blocks, freeze them, or crumble their eggs before the little fellows have a chance to hatch.

The easiest way to ice Sno-Bees is freezing them along the walls, but until you learn the art of Sno-Bee smashing and Sno-Bee egg crushing, you may not make it past the first round.

Like most games, this one can be habit forming. The most difficult part is treating the Sno-Bees like adversaries. Unfortunately, they're almost as cute as *PENGO*. —Elizabeth Metzger

*PENGO* is available in cartridge format. Requires 16K RAM and joystick. Suggested retail price: \$44.95. Also available in cartridge format for Atari 5200 Super System. Suggested retail price: \$40.95. Available winter, 1984.

## JUNGLE HUNT

### Sir Dashley to the Rescue!

*Bad show, Sir Dashley! I'm afraid that while you were busy photographing that rare specimen of butterfly, a surly bunch of cannibals made off with Lady Penelope. If you pursue them, you'll surely perish. Well, if you insist . . . but watch out for the crocs!*

**J**ungle Hunt is an engaging game that the whole family will enjoy. As Lord Dashley, you must jump swinging vines, swim crocodile-infested waters, jump runaway boulders, and finally face a duo of cannibal guards to rescue Lady Penelope.

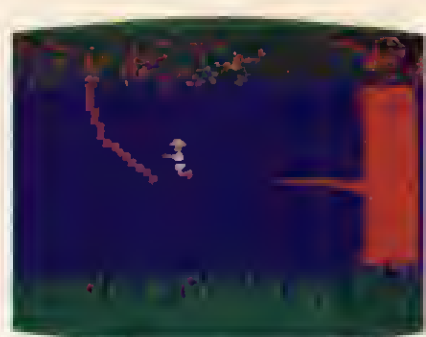
Play *Jungle Hunt* at the Beginner Level. It's the most satisfying, because it progresses from easy to difficult in graduated stages. You must master four screens to rescue Lady Penelope.

### The Swinging Ropes

You begin play by standing casually on the limb of a tree. To start your journey, you have to jump onto a series of swinging ropes.

To jump, simply push your joystick button — no need to manipulate the joystick itself. But while jumping is easy enough, making it to the next rope is another matter altogether.

Carefully watch the movement of the rope you're jumping to. Wait till it disappears and just begins to swing back toward you. Jump at that moment, not before, and you'll make it with ease.



The trick is knowing just when a rope is coming back, since it's off the screen when it changes direction.

### Crocodile Creek

After that long swing through the jungle heat, you think that a cool dip in the water would be refreshing. Well, maybe it would, if man-eating crocodiles weren't coming at you.

You have two strategies for dealing with the crocs. The first is to avoid them entirely, swimming above or below them. While this approach is the safest, you lose out on the points you could score — anywhere from 100 to more than 300 — by knocking off crocs. After all, you're armed with your trusty hunting knife. So go for those crocs! To kill a croc, swim up at it from below. When you're just below and in front of it, stab the critter by pushing your joystick button. You must face at least 11 crocs, but if one manages to get a hold of you, you'll have even more of the beasts to deal with.

There's another hazard in swimming: pockets of jungle gas that hubble up from the river bottom. The most stylish method of dealing with a bubble is to time your progress so that you can swim under it. Another workable but somewhat embarrassing method is just to let the hubbles grab you and ride things out, taking care not to let any hungry crocs get near.

### The Runaway Boulders

Your next test: running up the side of a mountain while dodging rolling rocks.

At the Beginner's Level, the runaway boulders are pretty easy to beat. You must avoid 22 boulders in all. The first 15 are just small rocks, so you can jump them easily by keeping your joystick pushed forward (for high jumping) and pushing the button to clear each boulder.

The 16th boulder is a large one. The best way to handle it is to position yourself in front of it, and, just as it begins to bounce up, duck by pulling the joystick back and punching the button. The boulder will sail over your head. Boulders 17 through 19 are small, but boulder 20 is a big one, so avoid it just like

boulder 16. The last two are small, but don't rest just yet. Prepare yourself for the final rescue.

#### Cannibal Camp

Oh no! *Lady Penelope* has been trussed to a sturdy vine and is hanging above a pot of boiling stew!

Timing is all-important. Execute a high jump to the left—you will land directly between the two cannibal guards. Now, wait until *Lady Penelope* has been lowered to just above the pot and is on her way back up before you make your next move. Avoid the guards while you wait by stealthily creeping back and forth between them.

Just as *Penelope* starts moving up and the guard on the left starts moving to the left, make a second high jump to the left. You and *Lady Penelope* are united once more.

Strategy by Eric Chodun. Reprinted from *Inside Secrets to Atari Home Computer Games*, published by Atari, Inc.

*Jungle Hunt* is available in cartridge format. Requires 16K RAM and joystick. Suggested retail price: \$49.95. Computer cartridge available in December. Also available in cartridge format for Atari 2600 VCS and 5200 Super System. Suggested retail price: \$35.45 and \$40.95 respectively.

## IT'S MUSICAL PILOT

*A Balloon Ride for the Younger Set*



It's a plane. It's a song. It's *Musical Pilot*, a new educational game from Atari Program Exchange (APX). Not to be confused with the computer language PILOT, *Musical Pilot* is designed to teach preschoolers musical notation in a fun way.

Here's how it works. One child plays at a time, using a joystick to move a bright red airplane up or down a musical staff to pop balloons, each balloon representing a note in a melody. Several songs are programmed to play for each of the four lessons (64 children's songs in all). By popping the balloons, the

child learns to associate the pitch of a note with its position on the staff.

Since *Musical Pilot* is intended for preschoolers, I invited two preschool friends to review it: five-year-old Sasha and three-year-old Gabriel. Sasha was the first to arrive. His father, a piano tuner, was anxious to see how his son would do. I showed Sasha how to use a joystick (he had never used one before), and from there on, Sasha quickly caught on to *Musical Pilot*. Within a half hour of play his score and coordination improved dramatically. After Sasha popped every balloon in the first lesson, he moved on to the second, in which the airplane speeds up and Sasha had to anticipate the next note of the song in order to pop the balloon. The second lesson proved to be challenging and exciting; after a number of tries, Sasha seemed to understand the correspondence between the written mark and the musical sound.

Gabriel, meanwhile, arrived with his mother, a teacher, who happened to be looking for a computer game for him. Gabriel boldly walked up to the computer and immediately became enthralled by the songs, colors, and graphics of *Musical Pilot*. Sasha joined in and tried to teach him how to play *Musical Pilot*, but Gabriel's hand-eye coordination was not yet prepared for this computerized music lesson. Nevertheless, judging by Gabriel's enthusiasm, I still recommend it as a way to gradually introduce music and musical notation to younger children.

For older children between the ages of four and six, *Musical Pilot* is an excellent educational tool. It can be used to introduce musical notation, as well as complement formal musical training. Children can be encouraged to sing along with the different melodies or name the notes as they appear on the screen. Such exercises help enhance the child's musical development and emphasize the educational over the "video" aspect of the game.

*Musical Pilot* does not replace music teachers, violins, pianos, but it does succeed where they at times might fail: to motivate a child to learn more about music and musical notation. *Musical Pilot* is fun and educational. It has bright color graphics, allows the child to be an active participant and offers several levels of difficulty—everything you'd want in a computer game for children.—Michael Howard

*Musical Pilot* is available in diskette and cassette format from Atari Program Exchange (APX). Requires 16K RAM for cassette, 24K RAM for diskette; joystick. Suggested retail price: \$24.95.

# Debug Your Atari Humbugs

## Give Atari Books

**ATARI BASIC, Learning By Using** by Thomas E. Rowley. Learn ATARI BASIC easily through the many short programs provided. 73 pages. ISBN 3-921682-8-X \$7.95 retail.

**HOW TO PROGRAM YOUR ATARI IN 6802 MACHINE LANGUAGE** by Sam D. Roberts. Teaches machine language, the use of an assembler and how to call subroutines from the BASIC interpreter. 106 pages. ISBN 3-921682-97-5 \$9.95 retail.

**GAMES FOR THE ATARI** by Sam D. Roberts. Provides ideas and examples of computer games that can be written in BASIC. 115 pages. ISBN 3-911682-84-3 \$7.95 retail.

**FORTH ON THE ATARI - Learning By Using** by Ekkehard Floegel. Forth application examples for the novice and expert programmer. 118 pages. ISBN 3-88963-170-3 \$7.95 retail.

**HACKER BOOK FOR YOUR ATARI COMPUTER** by H. C. Wagner. Machine language I/O. Subroutines for the advanced computer programmer. Many sample programs. 116 pages. ISBN 3-88963-172-X, \$9.95 retail.

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**Be Thoughtful This Season**



The Thoughtware Company



# A Long Winter's Tales

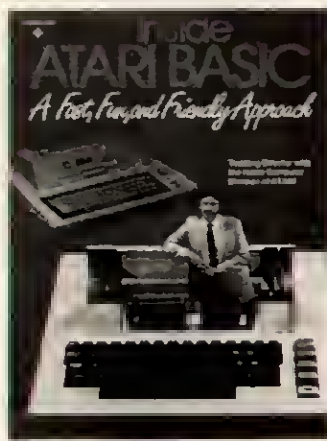
## Christmas Shopping for the Computer User

by Jim Inscore

**T**HE NUMBER of computer books on the market has grown to staggering proportions in the past year. Whereas a year ago, there may have been five or ten books available that specifically dealt with Atari computers, today the number must approach 50. And there's no sign of letup in this proliferation of titles. These books cover everything from the most fundamental principles to the specifics of using the Atari Assembler-Editor for machine language programming. As a result, the following list is by no means complete—there are a good many other excellent books on Atari computers on the market.

One of the most successful books introduced in the past year is Bill Carris's *Inside ATARI BASIC* (Reston Publishing, Reston, Va., \$12.95). Developed originally as the curriculum for Bill's training classes within Atari, the material here makes light work of most of the concepts of BASIC programming. With a combination of snappy text and alternately amusing and instructive illustrations, the book provides a solid groundwork from which the most novice programmers can take off in any direction. Topics covered include basic procedures such as PRINT, GOTO and IF/THEN. The book also offers general introductions to Atari computer sound and graphics capabilities.

Another highly successful book is Lon Poole's *Your Atari Computer* (Osborne/McGraw Hill, Berkeley, Ca., \$15.00). This book takes a drier, more traditional approach to the subject matter. The first two chapters provide introductory material on the Atari computer system, with details on connection and brief explanations of equipment operations. Subsequent chapters deal with



BASIC programming, the Atari disk drive and Atari Disk Operating System (DOS), graphics and sound, and advanced programming procedures.

For those interested in learning specifically about the sound and graphics capabilities of the Atari computer, a couple of books recommend themselves. *Atari Sound and Graphics* by Herb Moore, Judy Lower and Bob Albrecht, (John Wiley & Sons, New York, \$10.95) is the latest of the self-teaching guides. It provides a detailed tutorial on manipulating ATARI BASIC graphics and sound commands. While it comes up short of introducing game design concepts, this book is nevertheless good for the novice looking to get his or her feet wet in the world of computer artistry.

Another book that deals with graphics and sound, but in a little more detail, is *Compute!'s First Book of Atari Graphics* (Compute! Books, Greensboro, N.C., \$12.95). This work does provide an introduction to game design, so it's a best bet for anyone trying to come up with the next *Star Raiders* or *Pac-Man*.

Also on the recommended list for

more advanced programmers from Compute is *Mapping the Atari* (Compute! Books, \$14.95), a complete rundown of Atari computer memory addresses, with explanations of areas reserved for the operating system, DOS, and program storage. This is probably the most thorough guide to PEEKing and POKEing your way around the Atari computer, a genuine "must-have" for serious programmers.

For anyone more interested in finding the most useful packaged programs than in learning to write their own, there's *The Addison-Wesley Book of Atari Software* by Jeffrey Stanton, Robert P. Wells, and Sandra Rochowarsky (Addison-Wesley, Reading, Mass., \$19.95). In its pages they'll find evaluations on games, business, education and utility programs, complete with grades for overall quality, value, vendor support, documentation, error handling, and reliability.

### A Quick Guide to the Quick Guides

The newest phenomenon in the computer publishing business may be your best choice as a stocking stuffer for the Atari computer owner. A handful of these useful guides are available now at your local book or computer store, and all of them provide a quick, no-nonsense information resource.

Wiley's *ATARI BASIC Quick Reference Guide* (John Wiley & Sons, New York, \$2.95) is a brief but thorough overview of the commands available in ATARI BASIC, complete with graphics modes and color value tables, joystick inputs, musical scale values and an error message listing.

The Osborne/McGraw Hill *Disk Guide* to the Atari computer is handy both for its thoroughness and for its size—that of a standard 5-1/4-inch floppy diskette. It contains information on everything from BASIC and DOS to Atari ASCII codes and POKE locations. And it's convenient to store in your disk file for instant reference.

From Alfred Publishing (Sherman Oaks, Ca., \$2.95 each) come two pocket-sized quick guides, the general guide, *How to use Atari Computers*, which offers an overview of the complete Atari computer system, plus the *Understanding Atari Graphics* guide, with a thorough rundown of the commands people most want to know how to use, including joystick port access and a set of short BASIC demo programs to show the beginner what it's all about.

Jim Inscore is the Writing Manager for the Atari Products Company.



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# The ANTIC Mode

## "But Can the Computer Take a Joke?"

by Herb Kohl

THE WORD "antic" comes from a Latin word that means grotesque. Antic refers to jokes, tricks, riddles, and all kinds of strategies that are used to fool people and make them laugh. It is the root of other words such as antique and antiquated. Your Atari computer has a special microprocessor chip that is called the ANTIC chip. ANTIC controls the graphic display screens that you can access with the Atari computer. I'm not sure exactly why this particular chip was called ANTIC, but it's easy to make a few guesses. The computer is frequently a trickster. It lets you see movement on the screen when there isn't anything really moving.

I remember the first time I showed this simple animation program to a group of young people. The first question they asked was how I got the character to dance. The answer was that I was plotting and erasing on the screen. There was no movement except in the mind of the viewer.

This animation technique can lead to wonderfully simple animations using the Atari control characters, as well as the higher resolution graphics modes. Here's a simple program that uses control graphics to show a ballet:

```
10 REM (CTRL) ANIMATION
20 GRAPHICS 0
30 POKE 752,1
40 PRINT " "
50 PRINT " "
60 PRINT " "
70 PRINT " "
80 FOR X=1 TO 50:NEXT X
90 GRAPHICS 0
100 POKE 752,1
110 PRINT " "
120 PRINT " "
130 PRINT " "
140 PRINT " "
150 FOR X=1 TO 50:NEXT X
160 GOTO 20
```

You can easily modify these programs to move people and objects around the

screen without having to get into the complexities of player/missile graphics. Character graphics make it possible for the beginning programmer to create with images on the screen.

When you get frustrated you can try turning your computer into a psychiatrist. PILOT is a wonderful language for computer dialogue. For example, let's suppose that you wanted to develop a very supportive computer psychiatrist. Its answers to your questions will always be positive and its vocabulary will consist of such platitudes as, "You are right to feel that." "Don't be discouraged." "You have the strength to overcome it."

A more pessimistic psychiatrist computer would have such upbeat musings as, "Think about the past." "Who made you feel this way?" "So you think you're the only one that's hurting?"

Here are two PILOT programs that give the optimist and pessimist computer psychiatrist a chance to psychoanalyze you. Please take them in an Antic mode.



```
10 R:The Fessenist Psychiatrist
20 T: What is your name?
30 A:$NAME
40 T: How do you feel today $NAME?
50 A:$FEEL
60 T: Do you remember when you first
70 T: were $FEEL $NAME?
80 A:
```

```
90 T: Are you sure?
100 A:
110 T: There is a trauma at the
120 T: bottom of every feeling $NAME.
130 T: Tell me about your traumas.
140 A:
150 T: You have a lot of problems.
160 T:
170 T: But it's good you could
180 T: express your feelings $NAME.
190 T: By the way, your hour is up.
200 T: That'll be 100.00.
```

```
11 R:The Optimist Psychiatrist
20 T: What is your name?
30 A:$NAME
40 T: How do you feel today $NAME?
50 A:$FEEL
60 T: Do you really feel $FEEL $NAME?
70 A:
80 T: Are you sure?
90 A:
100 T: It's always a wonderful thing
110 T: to express your feelings $NAME.
120 T: How are you feeling now?
130 A: $NOW
140 T: Do you really feel $NOW $NAME
150 A:
160 T: It must feel good to express
170 T: your feelings $NAME
180 T: By the way, your hour is up.
190 T: You're great. You owe nothing.
```

The computer can be a pretend psychiatrist, (maybe pretend is the nature of the profession anyway). But can it tell a joke? My guess is that computers can be funny despite themselves. I've been programming a lot the last few weeks and the more tired I get the funnier the computer becomes. When I want to LIST a program, I find myself typing LUST or LIFT, and it keeps on telling me that I'm making an error. The comments may be meant as moral judgements, but I insist upon taking them as jokes.

My favorites computer joke, however, is RUNDY--what you get when you type RUN over READY. The more tired I get, the more I RUNDY.

It's as easy to program riddles as psychiatrists (imagine programming a psychiatrist...). See what you can do to build upon the simple program forms that my current antic temper led me to and find ways to "input" some humor into your computer.

Herb Kohl is an author of numerous books on computers and education and is the Director of the Coastal Ridge Research and Education Center.

# Worried About Computer Compulsion?

## Users' Group Enthusiasts Provide the Answer

by Earl Rice



AS I WAS DRIVING to work last week, I was listening to an interview on the car radio. The host and his guest, a psychologist, were talking about people who become so involved with their computers that they lose contact with reality — some even wreck their home lives. The psychologist was talking in very general terms, and seemed seriously concerned that such a preoccupation with computers might become a widespread problem. As I listened, I began to worry.

I went over my computer activities for the last week. Let's see, I edited the church newsletter, printed the mailing labels, and worked on a friend's resume. What else? Oh, yes! I spent an hour-and-a-half playing *Dandy!* And I use my computer at work! Was I spending too much time with my computer? I hadn't thought so. But how could I tell? If I were weirding out, wouldn't I be the last to know? (I tend to get a little hysterical when I drive and think at the same time.)

By then I had arrived at work and I began to calm down. Of course I was overreacting. I use my computers a lot, but I'm not what you would call a certified computer burnout. Still, the idea got me thinking. There probably are people who get obsessed with computers and do lose contact with other people. What's the dividing line between healthy involvement and obsession?

As it happened, that same day, I got a letter from Dave Mann. Dave is presi-

dent of the Austin Atari Computer Enthusiasts (AACE) in Texas. When we visited AACE a year ago, they were a small group with a few experienced, vocal computer enthusiasts and a few more members who were wondering what they could do with their computers besides playing games. Today they have about 140 members and they've found quite a few worthwhile things they can do together. Besides developing programming courses for their members and helping new computer owners select software and peripheral equipment, they sponsor a computer education program for low-income families in Austin, and demonstrate their Atari computer systems to local schools. They also find time to help the staff from Atari with local product presentations.

A pretty busy crew, this Austin group. And if my memory serves me right, not a zombie in the bunch. Pretty outgoing, if you ask me. Downright enthusiastic!

That's the key, of course — enthusiasm. Sharing what you've got and what you know. That's what keeps interest from becoming obsession — other people.

If you're spending all your time alone, staring into your TV screen — whether or not it's connected to a computer — and you haven't gone out lately to see if the world is still there, you might start looking at yourself a bit. After all, no one is an island. Not even programmers. Or writers.

Learn and teach. Have and share. That's what life is about. Even life with computers. That's why we build them. That's at least part of why you buy them. And that's what users' groups are all about.

Earl Rice is the Manager of Atari Users' Group Support.

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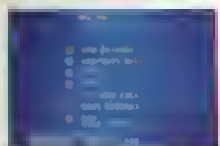


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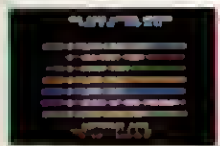


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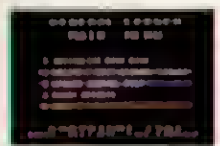


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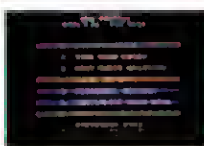
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